SOFTWARE COVERED: 3DS MAX • MODO • CINEMA 4D • POSER • ZBRUSH

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3DArtist 20

Practical inspiration for the 3D community

8-PAGE TUTORIAL SPECIAL

CONCEPT CHARACTERS

Learn to rig, pose and add texture to character models

In the Workshop

- Ambient Occlusion in Max
- Rim light effects in Maya
- CINEMA 4D caustics
- Motion blur in Poser

•Back to basics

Animation

The first steps for animating objects in CINEMA 4D

•Essential theory

Learn to light

Professional artists share illuminating techniques to improve your lighting

•Feature

Grand designs

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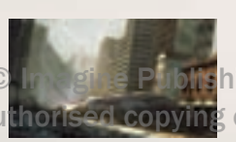
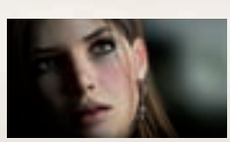
Andy Hickinbottom talks saucy toons and reveals all



Stefan Morrell

This 3D maestro shares some of his techniques



Photoreal expressions

Achieve the holiest of 3D grails – photorealism

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Artist info

Olivier Bucheron

Personal portfolio site
www.zamak.fr

Country France

Software used
CINEMA 4D

Cover artist

It has always been our ambition to get a monkey on the cover, but to get a supercool robo-monkey surpasses even our wildest dreams. Especially since it has been crafted by the ever-talented Olivier Bucheron.

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Welcome

to the magazine and 116 pages of amazing 3D

Every issue you can count on...

1. **116 pages of creative inspiration**
2. Behind-the-scenes guides to images and fantastic artwork
3. **A CD packed full of creative goodness**
4. Interviews with inspirational artists
5. **Tips for studying 3D or getting work in the industry**
6. The chance to see your art in the mag!

Lighting is one of the most fundamental tools you can use. Good use of lighting results in work that crackles with life and holds the viewer's gaze. You can add drama to a scene and control where a focal point is, just through your illumination. Our main feature this issue looks at lighting and reveals how and why artists use it to the best effect. If it's something you've not really considered before, head over to page 28 and find out why you should centre every image around it.

On a different note, you will have a new face here next issue. Sarah Slee will be the new gal in charge of the 3D madness, so please make her welcome!

Jo Cole,
Editor in Chief

This issue's team of expert artists...

Poz Watson

Poz enters the world of Google SketchUp software to see how it is used by arc-vis artists and how it can help you

Dmitriy Glazyrin

Combining Photoshop with 3D can lead to spectacular results, as demonstrated by Dmitriy's work

John Hayes

Returning for another slice of warrior pie, John turns his attention to adding the finishing touches to his savage model

Kléber Dárcio

Photorealism is the holiest of 3D grails and Kléber reveals how he concentrated on real expressions in his portrait

Stefan Morrell

Stefan needs no introduction to 3D artists – he is one of the best out there. Now you can learn some of his tricks

Christian Darkin

Christian reveals how you can incorporate Poser figures into other 3D programs, giving you the best of both worlds

Lance Hitchings

Rim lighting is the topic of choice for Maya maestro, Lance. Learn how to apply this subtle lighting for ultimate effects

Paul Francis

Paul turns his attention to motion blur in Poser, revealing how it can be used to add life to static images

Daniel Lovas

Daniel explains the basics of caustic lighting in CINEMA 4D, helping you achieve the maximum realism

Ryan Knope

Keeping with the lighting feel, Ryan looks at Ambient Occlusion in 3ds Max, showing its use in different light scenes

Rob Redman

Rob turns his hand to animation, showing you some of the basics to get you started. Check back next month for more

Duncan Evans

Duncan returns for a medley of tasks, one of which involved finding out about the creation of a 200lb Great Dane

Sign up, share your art and chat to other artists at

www.3dartistonline.com

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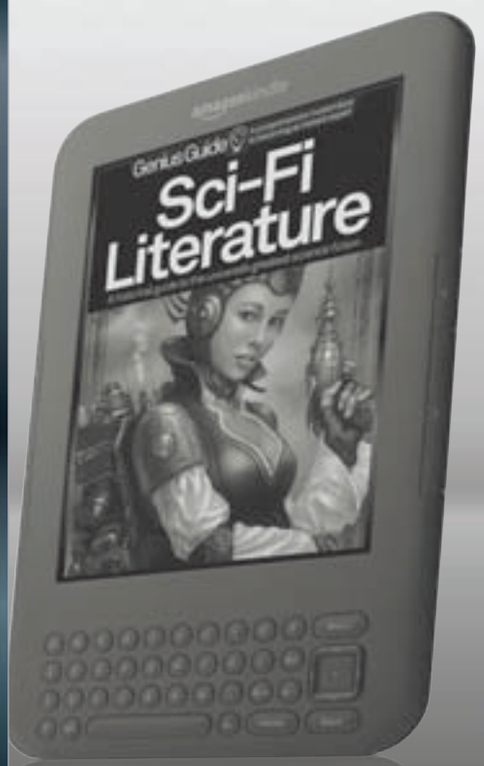

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Concept characters

“Discover how to finish this concept warrior from a distant land, with exaggerated forms and weapons”

Part two of our warrior course

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> A symbiosis of 2D and 3D to produce a CG wintry landscape which is both technically complex and atmospherically evocative
>
> **Dmitriy Glazyrin,** on creating an environment scene. **Page 52**

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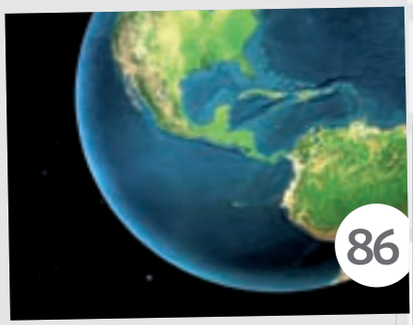

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Video course: 56 minutes of tuition

Get to the bottom of freeform modelling in 3ds Max 2011

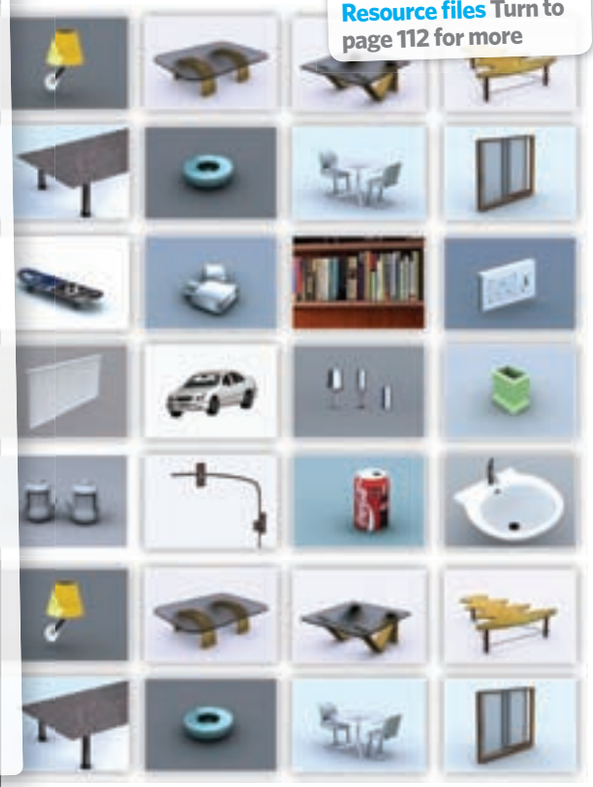
Plus models, resources and 50 seamless textures

Turn to page 112 for the complete disc contents

On the Disc

CG India

Resource files Turn to page 112 for more



Continued overleaf

There's even more inside...

Turn the page to discover the interviews, reviews, industry advice and more that we've packed into this issue...

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See your artwork here...
Create a gallery today at
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Share your art, comment on other artists' images

"Avoid the pitfalls of lacklustre lighting with some basic theory and some illuminating tips from the pros"

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workspace 3D

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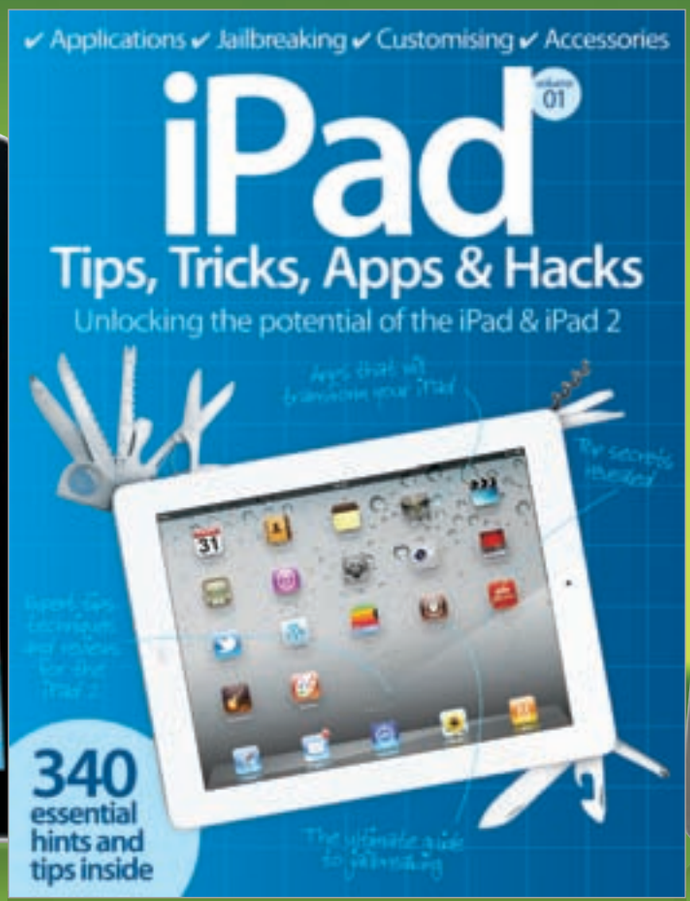

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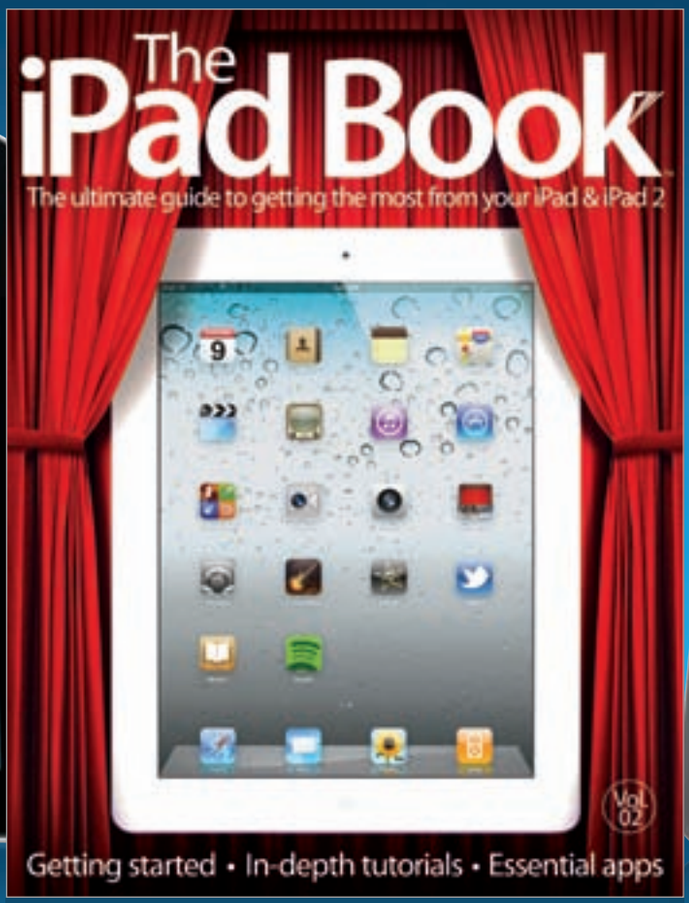
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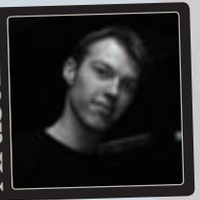
WELCOME TO THE GALLERY

Nine pages of great artwork from the 3D community

Images we love!

Artist info



Artur Owsnicki

Personal portfolio site www.3dartoo.blogspot.com
Country Poland
Software used 3ds Max 9, mental ray, ZBrush 3.5, Photoshop

Work in progress...

"The girl's wireframe was modelled in 3ds Max and exported to ZBrush for sculpting. I then created several texture layers for mr's skin shader"

Artur Owsnicki, *Cleo,* 2010

Featured artists

Artur Owsnicki
This month's Gallery kicks off with a surreal reptilian scene

Teodoru Badiu
A psychedelic animated world bound to appeal to the big kid in you

Josh Ruthnick
A modo character masterpiece; beware, this image comes with a bite!

Hugo Silva
This molecular 3D creation really shows the benefits of experimentation

Christopher Czerwinski
Head back to the future with this Syd Mead, vehicle-inspired artwork

Arseniy Korablev
An arc-vis of literally biblical proportions in this CG take on the Tower of Babel

Lizzie P
Film noir fans will love this moody illustration straight out of the Forties

Get your artwork featured in these pages

Simply send it to the **3D Artist** Gallery. Here's how...

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1. Register with us

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www.3dartistonline.com

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Have an image you feel passionate about? Drop editorial an email at **jo.cole@imagine-publishing.co.uk**.

Email or post

You'll be missing out on a thriving 3D community, but if you'd rather submit your work by email or post, here's how. Make sure your image is at least 3,000 pixels on the longest side, save it as a maximum quality JPEG or zip it up as a TIFF and email it to the address below. Please include your contact details! If you've created a Pixar-beating animation and want to see that featured on the cover CD, then save it onto a CD and post it to us. You can also send your images on CD. The addresses are:

sarah.slee@imagine-publishing.co.uk

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Comment on more great 3D art...

Head straight over to **www.3dartistonline.com**, register and you can leave comments for other artists. Some of the people featured here already have their galleries, so get online and join our club!

Create your gallery today: www.3dartistonline.com

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Artist info

Teodoru Badiu

Personal portfolio site
www.theodoru.com
Country Austria
Software used
modo, Photoshop

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The team Loves

"The colours and swooshy curves in this image remind me of the very odd and very beautiful programs I watched as a child"

Jo Editor in Chief

"This illustration is based on some of my character drawings. The aim was to create a new fantastic realm populated with all kind of characters. I have planned to create a few more illustrations based on this theme and to use them as exposure for my website. For modelling, texturing and rendering I used modo, while for creating finer textures and for adding the final Ambient Occlusion and DOF passes I used Photoshop"

Teodoru Badiu, *The Giant Acorn*, 2010

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The team Loves

"The angle is great for making this image pop out of the page, making it feel as though you could reach out and touch the fangs"

Lynette News Editor

"I entered this image into a contest to model a cartoon vampire character through the Luxology forums. The contest rules were to create every part of the image using only modo and some image-editing software. I painted all textures and sculpted detail areas in modo. In addition, I ended up creating six different blend shapes to show a softer side of Henning"

Josh Ruthnick, *Henning the Vampire*, 2010

Artist info

Josh Ruthnick

Personal portfolio site
www.ruthnick.com
Country USA
Software used
modo, Photoshop

Work in progress...

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Artist info

Hugo Silva

Personal portfolio site
www.hugodesign.com

Country Portugal

Software used
3ds Max, V-Ray, Photoshop

The team Loves

"Abstract can be a dream if it combines textures and focal points, as Hugo's image clearly demonstrates"
Jo Editor in Chief

"This image is a result of some experimental 3D forms. My intention was to create an abstract image with geometric forms and a sense of motion. I wanted to end up with something that was futuristic or scientific"

Hugo Silva, *Geometric Experimental,* 2010

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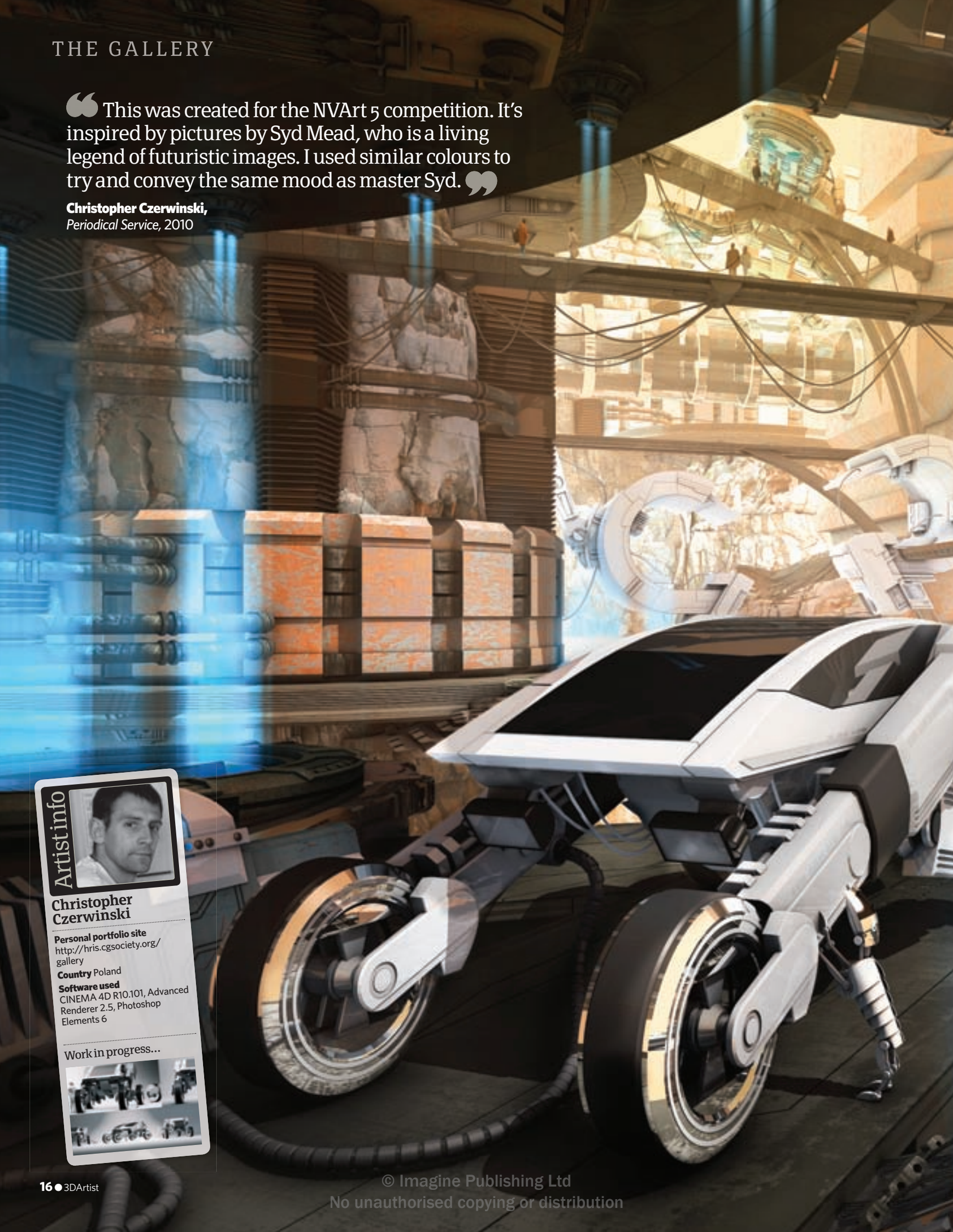

“This was created for the NVArt 5 competition. It’s inspired by pictures by Syd Mead, who is a living legend of futuristic images. I used similar colours to try and convey the same mood as master Syd.”

Christopher Czerwinski,
Periodical Service, 2010

Artist info

Christopher Czerwinski

Personal portfolio site
http://hris.cgsociety.org/gallery

Country Poland

Software used
CINEMA 4D R10.101, Advanced Renderer 2.5, Photoshop Elements 6

Work in progress...

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The team Loves

“The contrast light to show inside and out helps make you feel as though you are in the scene”

Jo Editor in Chief

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“This work was created to show the beauty, gracefulness and large scale of the Babylonian architecture. The tower of Babel was founded for contact between different civilisations. These contacts are available due to the portal which is located in its centre. The construction hasn't been completed yet. It will tower above the Earth endlessly”

Arseniy Korablev, *The Tower of Babel,* 2009

The team Loves

“Good use of light and colour to emphasise the golden sheen on the front of the building”

Lynette News Editor

Artist info

Arseniy Korablev

Personal portfolio site
http://arsdraw.deviantart.com

Country Russia

Software used
3ds Max, Photoshop, V-Ray

Work in progress...

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Artist info

Lizzie P

Personal portfolio site
http://d9studios.net

Country USA

Software used
Poser 8, Photoshop CS4, Render Studio for Poser 8

"The noir effect was achieved using only a few harsh, bright white lights with deep shadows and also using Render Studio Monochrome from Runtime DNA. Other than the smoke and a little bit of contrast enhancing, this image required very little post-work to achieve the final effect"

Lizzie P, *Nightclub Noir,* 2010

The team Loves

"The lighting in this image is really superb and manages to encapsulate the mood and atmosphere of noir perfectl perfectly"

Jo Editor in Chief

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Accelerating into the future

ACCELERATE was the latest digital art competition from joint creators, CGSociety and NVIDIA

Anthony Scime was awarded second place

Pavel Mikhailenko took third place

First place went to Arnoldas Vitkus for his winning image, *Crono Viper*

3DArtist online .com

Submit an entry? Have a favourite? Discuss the CGChallenge results over on the **3D Artist** forums at www.3dartistonline.com

www.3dartistonline.com/forum

Syd Mead is an inspiration to many a CG artist, having concept designed for the likes of *Blade Runner*, *Aliens* and *TRON*. A visual futurist and a master of his craft, through the NVArt competition, hosted by CGSociety, artists were given the opportunity to pay homage to a living legend and test their own visions of the future.

The challenge was to create futuristic transport in the style of Syd Mead. This unique opportunity resulted in over 1,300 entries, including hundreds of submissions worthy of the several top spots. Sharing over $35,000 in prizes, the top five winners of the ACCELERATE challenge were selected by Syd Mead and a panel of judges, with the first-place winner enjoying $10,000 in cash, plus not one but two NVIDIA Quadro FX 8500 4GB – 240 CUDA processors.

Arnoldas Vitkus, who hails from Lithuania, scooped first prize with his striking entry, *Crono Viper*. "The overall colouration of this piece is an expert shift from highly specific detail on the vehicle to the 'overexposure' palette of the background," Syd Mead commented. "The result is a combination that enhances the vehicle, provides an eerie, otherworldly setting and removes the design from recognisable hardscape yet reminds of architecture. The metallic toning on the vehicle is brilliant; a suggestion of titanium, of silver, of exotic alloy yet to be fabricated."

Second place went to Anthony Scime for an intriguing but brilliantly executed geometric vehicle, and third place was awarded to Pavel Mikhailenko for his vision of a futuristic racing scenario. *Black Cucumber* was a fantastic entry taking fourth place; a sleek motorcycle beautifully rendered with a wondrous concept behind it, as the artist Roman Mrázek explained: "The engine is organic liquid full of sea creatures producing electrical current which is being enforced and runs the electrical engine."

Stay tuned to CGSociety for more to come from the NVArt winners and future contests at www.cgsociety.org.

Are you a fan of Syd Mead? Did you take part in the NVArt Challenge? Discuss this and more over on the 3D Artist forums: www.3dartistonline.com/forum

> "The NVArt contest is just one way for us to say 'thank you'" **David Wright,** creative director, NVIDIA

Fourth place was given to Roman Mrázek

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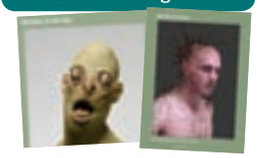
Blog watch

A guide to the most inspiring and informative blogs



Schell Sculpture Studio

Get your monster fix with regular sketch and sculpt updates

From sculpting in his basement as a kid to working for Stan Winston Studio, Jordu Schell has worked on an array of feature films, including *Avatar*. Now with his own studio, the blog is regularly updated with Monster of the Day sketches and sculpts that will keep your mind open to the never-ending possibilities of monster creation. **http://schellstudio.com/blog**

It's funny because it's true

Award-winning caricature art and design from Jason Seiler

Creating illustrations for clients such as *TIME Magazine*, *The New York Times* and *MAD* magazine, Jason Seiler's caricature work is mind-bogglingly brilliant. His blog tracks his works-in-progress with updates that will keep you entertained through both the humour of the subject matter and the technical brilliance of his craft. **http://jasonseilerillustration.blogspot.com**

The renders were fairly quick: around one hour per picture with an additional hour spent in post on each

Masterpiece

Recycling the Corvette

Piotr Tatar has rendered an old Corvette C1 model in a new scene, in preparation for an animation project

Piotr Tatar http://reflectvision.pl

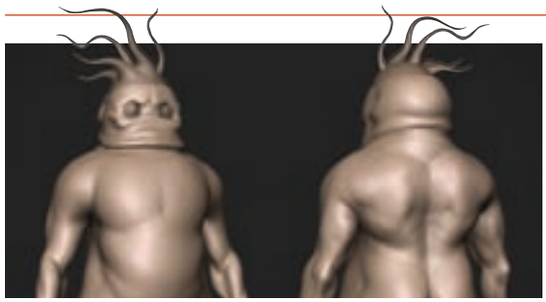
Originally creating a detailed model of a Corvette C1 over a year ago, an approaching deadline for Piotr's diploma project encouraged him to render this retro scene. To achieve the final image Piotr worked in 3ds Max, rendering with V-Ray and handling post in Photoshop and After Effects using a combination of render passes such as RGB, Alpha channel, Z-Depth, reflection, refraction, background and ID material. "To achieve some DOF, I used the Z-Depth channel," Piotr explains. "Maybe it's not physically correct but it's quick, and with animation it can really save time." The animation will eventually see the Corvette C1 showcased with the muscle cars, Mustang GT and Ford GT40. Follow his WIP at http://forum.cg-cars.com/showthread.php?t=6045.

Celebrate animation

The UK's biggest animation festival is back

Bradford Animation Festival is the longest running festival of its kind in the UK, now in its 17th year. With masterclasses, seminars, workshops, screenings and more from top industry names, BAF 2010 is a project from the National Media Museum that will be celebrating animation old and new between 9-13 November, with a side spin-off event taking a separate look at the creative world behind videogames. With awards for the likes of Best Student Film, Best Short Shorts, Best Commercial and Films by Young Animators, they're really covering the full spectrum. Tickets go on sale 13 September, so head on over to **www.nationalmediamuseum.org.uk/baf** for more information and plan a visit to Bradford.

BAF 2010 has a packed diary with events by top names in the industry

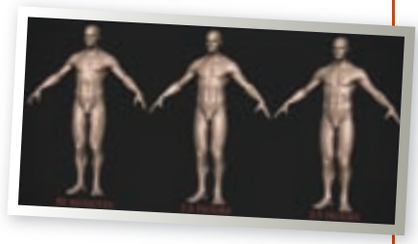


3D Sketchbook

With sculpting comes freedom

Federico Scarbini captures the essence of his ideas by sculpting in ZBrush

Federico Scarbini www.federicoscarbini.com



To Federico, sketching is all about exploration. Inspired by the forms as he sculpts and not getting too distracted with details, he gets past the 'blank canvas' (or perfectly round ZSphere!) stage by jumping into it and letting the ideas flow. "A good trick is something I read in ZBrushCentral forums," Federico explains. "By blurring the viewport you don't get too distracted with tiny details but can just work on major forms. This can be done by setting the VBlur slider higher than zero in the Preferences>Draw menu." He also uses the Rake brush to establish planes in his model, which he finds fundamental in stopping him jumping into detailing too quickly since it breaks up the forms' rhythm. For Federico, ZBrush has changed his workflow and helped him to unleash his creativity since his days of poly modelling.

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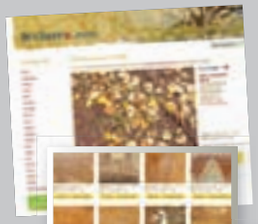
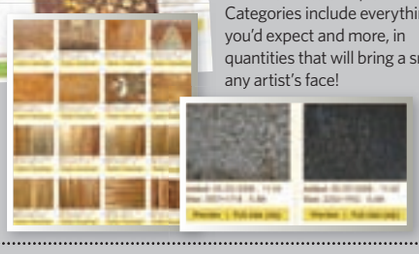
Web: http://texturez.com



TextureZ is run by a texture photographer and jewellery designer who love to share the beauty of the world with others through free textures for all. And who are we to complain? Categories include everything you'd expect and more, in quantities that will bring a smile to any artist's face!



Stock.XCHNG

Stock up your reference library

Web: www.sxc.hu

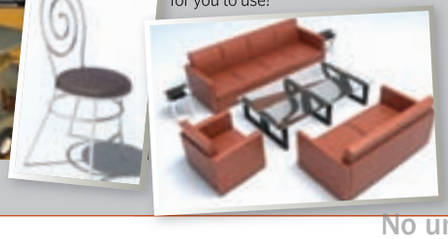
Stock.XCHNG is a site where artists can browse and download photos for free, as well as share their own with others. Search by keyword or you sort photos by most downloaded or most commented images; there's plenty to choose from – but be sure to check out the usage rights for each photo!

CGDigest

Giving back to the community

Web: www.cgdigest.com/free-3d-models

Alex Mincinopschi is paying thanks to the 3D community that helped him when he needed it most with free 3D models for everyone. Use them as you wish, but do not re-distribute them – it's just common sense, really. Most of the models supplied are for 3ds Max with V-Ray materials, ready for you to use!



Artist spotlight

Inspired by Pixar

From watching Disney movies to directing short animated films, Ali Chenari now inspires others with his own CG creations

Ali Chenari http://alichenari.cgsociety.org/gallery

Ali worked for several years doing animation, modelling, texturing and designing before starting the directing stage of his career. Having now worked on two short animated films, several commercials and TV series, Ali reminisces about how he started out in animation by combining CG with photos. Getting the bug, he researched and trained himself in various software applications and then completed animation studies at Tehran University in Iran, where he still lives today. Ali tells **3D Artist**, "I am presently working at Vishka Studio in Tehran, acting as director and art supervisor and working on a short animation movie, as well as the preproduction of a TV series."

Ali uses 3ds Max, BodyPaint, mental ray and Photoshop to create these cheeky CG toons

behind the scenes

A riverside tale

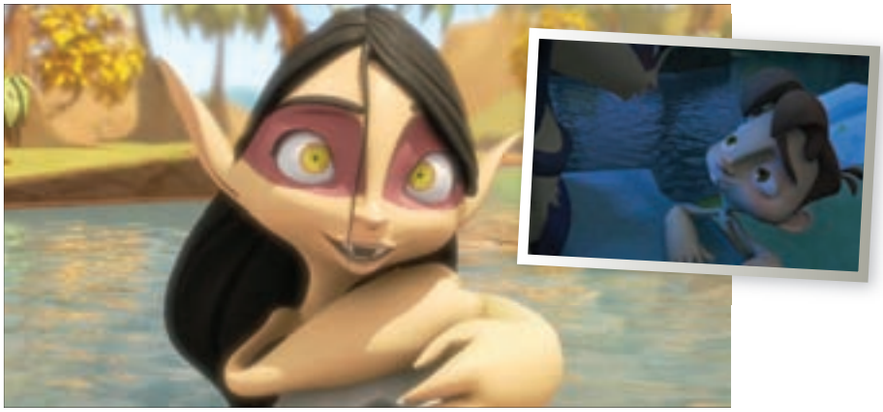
Directed by Fernando Herrera for Magma Cultural, Kauan and the Legend of the Waters is a story about a boy, a fish and a mermaid

Fernando Herrera http://fhra.blogspot.com

The moral of this story is a good one: clean up that pollution! Living beside the São Francisco River, the adventure sees a young boy called Kauan meet Lara, the mermaid, who asks him to save the river from all the pollution in exchange for saving his friend Piau, the fish.

A team of 16 had two-and-a-half months to animate 20 minutes, with six full-time animators and three part-time. Choosing Maya and building a few tools to import and export animation and shaders, as well as an auto-rig tool made by one of the riggers, they saved a lot of time. The water posed a big problem since the majority of the film has the characters interacting with it – the solution to which came in the form of Houdini, and the final results are simply stunning!

Despite technical hitches such as unstable render farms and some necessary rotoscoping to fix a few production issues, the most important thing for the team was to keep a great working environment, as Fernando explains: "It allowed us to be calm and think about the best options, besides being much easier and pleasurable to work." View the short on Fernando's blog, with a full list of credits at http://fhra.blogspot.com.



Kauan and the Legend of the Waters was created to be screened in schools all over Brazil

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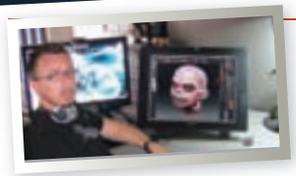
Create 3D like a superhero

Rule your own world with this new graphic handbook from e-on software

Let's face it: 3D isn't easy. Where do you start? Well, e-on software has come up with a solution to the problem with a graphic handbook designed to guide beginners into the world of 3D by Vue's own comic book characters. 120 pages will take new 3D users through landscape creation as well as modelling in Vue, interior lighting setups and creating successful renders. And with over 500 renders and illustrations, this is not your average comic! It's a handy manual and can be yours for just $29.95, which includes a free special edition of Vue Pioneer to get you started. Visit www.e-onsoftware.com/products/training/superhero.php for sample pages and to order a copy.

Become the creator of worlds with this comic-style manual



Inspiration corner

It's all in the reference

Chris Moffitt has been working in the industry for nearly ten years creating models for film and games, with a passion for designing, modelling and texturing characters

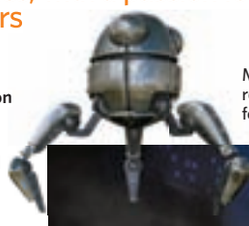
Chris Moffitt www.chrismoffitt.com

3D Artist finds out how Chris Moffitt keeps his passion for 3D alive...

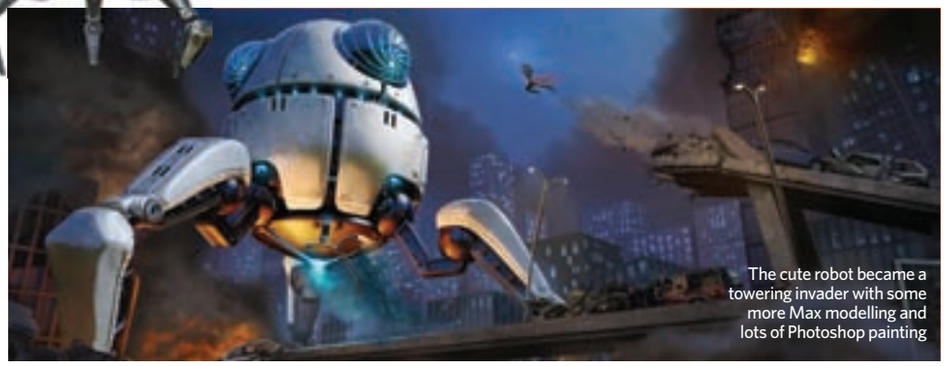
3D Artist: What are the chosen tools of your trade and why are they essential to your workflow?
Chris Moffitt: ZBrush, Photoshop and 3ds Max are the tools I use the most. ZBrush is the most fun though because it really lets you quickly explore different forms and shapes when designing a character and is the closest to actual clay sculpting. Other great tools are my anatomy books; Bridgman's *Drawing from Life* and *Anatomy for the Artist* are the two I use the most. They're filled with post-its so I can quickly jump around to all the areas I struggle with when sculpting anatomy.

3DA: Where do you tend to turn for inspiration when it comes to your 3D projects?
CM: I will usually thumb through lots of magazines, my Spectrum books or visit websites such as CGHub, CGSculpt and ZBrushCentral to see what's making the top row or editors' picks. That will usually push me to try and do something better than the last artwork that I did. I also have an entire hard drive dedicated to amazing references that I will just scroll through and hopefully absorb ideas/information before I start something new.

3DA: What projects are you working on right now?
CM: At the moment I'm working on another robot – this time for a sculpting challenge on CGSculpt. The idea began with a picture of a desert tank which I saw online. I thought it might be cool to make this giant alien war machine that has a centipede-like body and a bunch of heavy-duty wheels with a large upper torso and giant gun mounts.



Modelled in 3ds Max, this robot was taken into ZBrush for the details and decimation



The cute robot became a towering invader with some more Max modelling and lots of Photoshop painting

3DArtist online.com
Create your gallery, browse the artwork, chat with experts and artists and get tips and techniques at
www.3dartistonline.com

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Want to know what your fellow 3D artists have been creating this month? Check out the best of the online gallery

A Surfin' Senior
» **Steve Sack**
Steve says: "This is my image of an old dude surfing. A good bit of fun"
We say: "This image made us laugh – the look of joy on the old man's face is priceless and we really like how you have created the water"

B Aston Martin DB4 GT Zagato
» **Sebastian Barbero**
We say: "A very good photo/3D composite. "We especially like the grainy look to the image, which makes it feel like a vintage shot"

C Zauber
» **Sergej Bolgert**
Sergej says: "This work was created with modo"
We say: "A lovely colour-infused scene with realistic lighting. We particularly like your use of textures, especially on the main character's jacket and also on his skin"

D Castle
» **Michael Eves**
Michael says: "A composite for my college course"
We say: "It's the lighting that wins with this image, really enhancing the fantasy scene"

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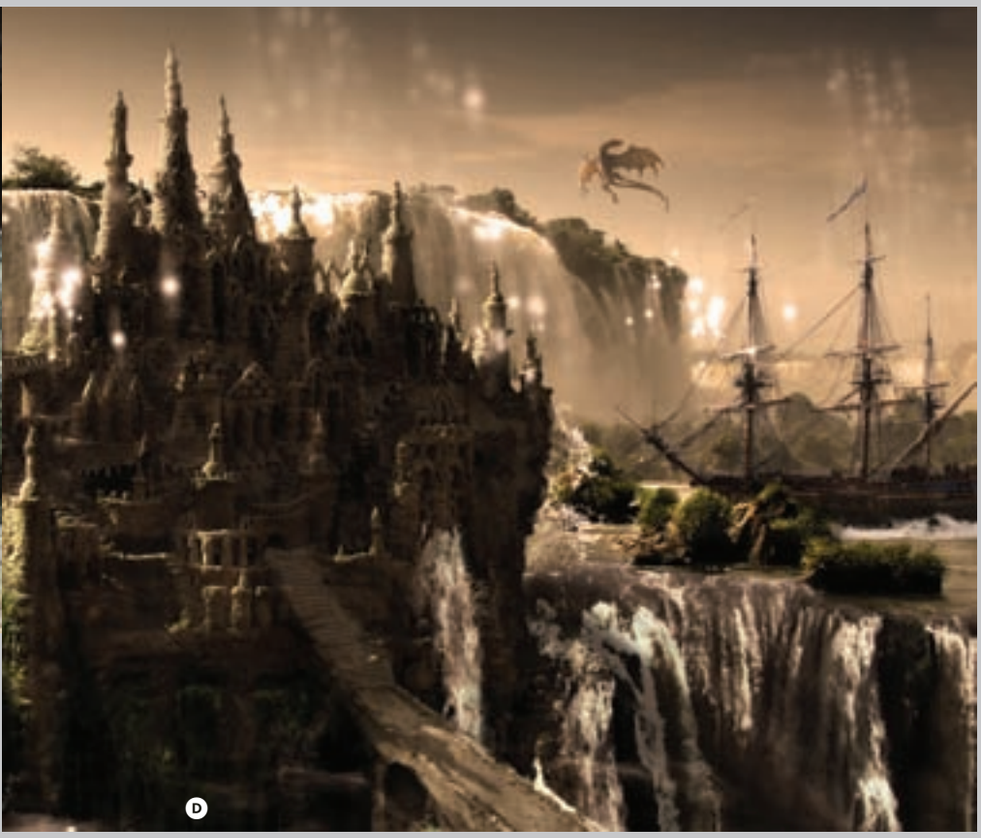
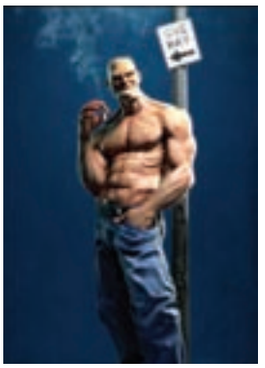


Pictures of the week

THESE ARE THE IMAGES THAT WERE AWARDED PICTURE OF THE WEEK IN THE LAST MONTH



What Dreams May Come

» **Drea Horvath**

Drea says: "Inspired by the movie *What Dreams May Come*. Created in Vue 8.5 Infinite"

We say: "Great atmosphere, especially with the gentle mist effects. It definitely lives up to its title with these dream-like effects"

Barrio Guy (left)

» **Jose Alves da Silva**

Jose says: "I have tried to represent a street bully in a stylised way, using hard shapes and edges to define his rough personality"

We say: "Definitely looks like a man to be avoided. Great texture detail"

Honda Cub-50 (above)

» **Obaid Farooq**

Obaid says: "I have been working on this Cub for a long time – almost two years. I had this concept in my mind but never got a chance to finish it. So recently I finally pushed myself to finish it off"

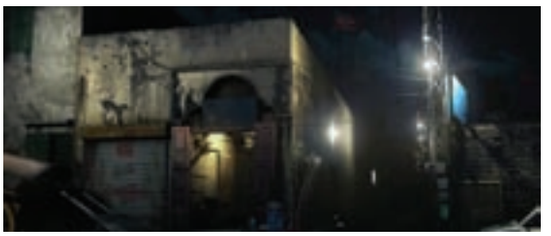
We say: "The simple background helps accentuate the colourful decorations on the bike. There is some great detail as well; we especially like the plane!"

The Three Worlds

» **Rana Azeem**

Rana says: "This image portrays three worlds; the world which we live in; the world which came into existence because of our existence; and the world which is coming into sight because of our existence. I hope you can see all three of them"

We say: "A great concept and some fantastic use of lighting"



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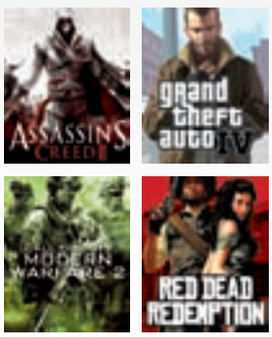

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Gathering light

Avoid the pitfalls of lacklustre 3D lighting with a look at the basic theory and some illuminating tips from the pros

In art, we tell stories through a play between light and dark. Light and shadow are powerful forms of communication when we're restricted to getting messages across in a single frame. We can direct the viewer's eye to an area of light or shadow – to what they can't see as well as what they can. Shadows can allude to forms not even present in the frame: the shade from a tree that's not visible in the scene, or the silhouetted shadow of a character standing behind the camera. Likewise, a crack of light streaming into an otherwise dark arena can simulate the idea of a canopy with an opening – without even needing to see it, our minds can determine its shape, size and distance from the camera, and even make a guess at its material. As well as providing information about form, light can also evoke emotion through its interaction with objects and space, and its shadows. It can give life to a character's persona or reveal the mood of a setting. But getting all this right requires a good deal of forethought and understanding.

It's important to know what you want to achieve before you start. Knowing how light works from both technical and artistic points of view is fundamental, as is working out the composition of your image from the beginning. This knowledge will help immensely when it comes to defining the right lighting scenario for your work. Think about what you want to achieve. Is your end goal a photoreal representation? Are you after a stylised character portrait? **3D Artist** sheds light on the subject by looking at the basics, where to seek inspiration from real-world references, and how to apply all this to your 3D practice for better, more believable results.

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Getting the right balance

Freelance artist Andrzej Sykut needs to have a clear vision of the lighting situation he wants to portray before he starts out on a new project. Keeping in mind his point of focus, and having approximate lighting and colour palette scenarios worked out, he saves a lot of time in the long run

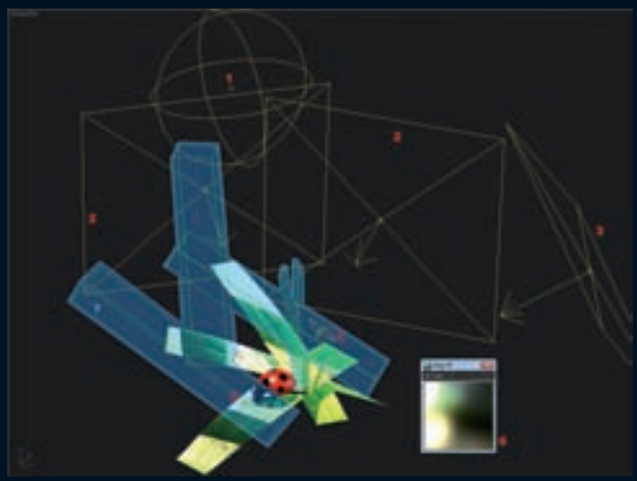
Artist website: http://azazel.carbonmade.com

Generally, I try to work out the rough lighting scheme and colour palette as soon as possible in the working process, often using proxy, low-res or unfinished objects, or even primitives – everything renders much more quickly this way, which means I can try various approaches without wasting too much time.

Knowing which objects will be lit and which will be dark or barely visible allows me to save some more time, by avoiding the detailed modelling/texturing of those non-significant objects. Another important thing is how lighting affects the composition and balance of the shot; introducing a little bit of shadow into a scene can fix a seemingly unbalanced shot, and vice versa.

As an example of a simple lighting setup for a photoreal illustration, take this ladybird. A key light (1) is my main light source, which is a spherical area light, to give me soft shadows and a nice, round reflection. Rim lights (2) provide some blue, sky-like reflections on the edges of the ladybird on the front and side of the insect. Additional fill lights (4, 5) highlight, very subtly, the head and back of the bug, and finally an HDR photo acts as my main fill/ambient light (6). Shadow casters (7) are invisible, but their shadows frame the bug, darken the corners and make it look as though there are more leaves in the scene. They also sometimes appear in reflections.

Getting as close to real life as possible in 3D is crucial, but trying to get it 100 per cent the same is not always practical – finishing things in the compositing stage can be a much, much faster route. With this particular project, the compositing was very simple: depth of field was added in post, as well as a photographic background, colour correction and some atmospheric details.



Andrzej demonstrates how he used several light sources to help achieve photoreal results in this wildlife shot

On the Disc

Discover free reference photos demonstrating how the direction of light can create dramatically different effects

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Get in the mood

Artist website: http://josealvessilva.daportfolio.com

01 Lit from above the character's features are softened in this example, but his eyes fall back into darkness where shadow falls. This technique is often used to give a God-like feel to characters

02 Bottom lighting exaggerates facial features and gives a more sinister look to the character. This kind of lighting scenario can give spooky effects to characters – and even objects/buildings!

03 The character has sharper features when lit from the side. With side lighting angled from the back we can give detail and higher contrast to a character's face, while adding a sense of mystery

04 Side lighting is a great way to enhance facial characteristics. With this character, side lighting is the perfect way to add definition to the muscles and give extra focus to his strong features

05 Backlighting silhouettes the character, plunging him into darkness with a rim of light to define his form. This method's great for anonymous characters, and works well for interestingly-shaped characters

06 Angled backlighting can give a suggestion of detail while keeping an element of mystery. This character looks menacing with this use of light, and a slight reflection caught in his eye adds to the threat!

We can add mood, atmosphere and dramatic impact to our images by playing with the direction of light. This manipulation of light can be particularly useful with character portraits, when we want to express personality through a still image. With a neutral expression, a character lit from above would take a saint-like appearance; in contrast, if lit from below you would get a more sinister feel. Side lighting is wonderful for defining things such as muscles and facial features, whereas backlighting can enhance a character with a strong silhouette.

Above, José Alves da Silva, freelance character artist, illustrates how positioning light at different angles within a scene can give a variety of dramatic effects to a character portrait, using his Barrio Guy as a model to demonstrate. Then try the various light scenarios on your own models!

Lighting: the basic theory

It's all too tempting for artists new to 3D to jump in and start placing lights into a scene at random... and then wondering why the results aren't what they hoped for. Knowing the basic theory will go a long way to helping you understand how light works, which in turn gives you the edge when it comes to setting up your lighting in 3D. Know what you want, and learn how to get it right.

We can only see the world because of light. "Everything we see is light," character artist José Alves da Silva explains. "We see because our eyes collect light and our brain forms an image with that information." When we see a coloured object, for example, the colour we see is actually the light that is being reflected back from it to our eyes. So what exactly is light, and how does it work?

Appearing white in its pure form, light is actually made up from a spectrum of all the colours that exist. Always travelling in straight lines from its source, light will cast shadows when something gets in its path and obstructs it from reaching what's behind. The colours in the spectrum of light have different wavelengths; some will be absorbed by the surface of an object that it hits, and others will reflect back. If pure light hits a white object it will stay white, meaning all the colours in the spectrum are being reflected back to the eye. Hitting a black object, all colours will be absorbed and none will be reflected. Let's take a red object as an example: shine a stream of white light onto its surface and all colours but red will be absorbed from the spectrum, so only red light will be reflected to our eye.

Reflection occurs when light bounces off a surface. It depends on the material properties as to the extent of the reflection; the rougher a surface the further spread the highlighted area will be – and less intense – since the light bouncing off it will be more diffused. A smooth, metallic surface will offer a sharp reflection in comparison, commonly referred to in 3D as specular highlights. Refraction, on the other hand, is when light changes direction as it passes through a material. Both phenomena are important to understand when it comes to 3D, since in order to achieve believable results with your lighting you need the right surfaces to interact with the lights in your scene to provide the effects you want. Understanding how materials will behave with light before you start will give you a lead, helping you to define their 3D properties.

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The book *Digital Lighting & Rendering* by Jeremy Birn comes highly recommended by senior 3D artist Maurice Panisch as one of the best guides he's come across while developing his understanding of how light works. Once you get your head around the theory, you can start practising different lighting scenarios in your work.

The direction, strength and colour of your light source will determine the fundamental character of your work. Lighting from the front will often flatten your image, whereas side lighting can help define surface properties by enhancing the details and textures as the light hits and casts shadows. Lighting from behind will create silhouetted objects and can create a rim light effect – which is great if that adds to the story you're trying to tell! It all depends on what your end goal is.

Using a hard light will create high contrast in your image, whereas a diffused light source will help retain colour. With higher contrast levels you'll get higher extremities of darks and lights, which can offer more impact – but be careful not to overdo it. Softer lights will almost wrap around objects, inevitably offering lower contrast and edges that are less defined.

The colour of your light will also have a big impact on the way your image is perceived. Using coloured lights can create completely different moods – again, it all comes down to the story. Nail that, and you'll know immediately what type of lights your scene requires. There is no right or wrong answer, just be sure of what you want to achieve and use the best method to see it through. Just never lose sight of that major reason we're using light in our images: to tell stories.

A Caustics occur when light is projected onto a surface having been reflected or refracted by a material or object. Take this glass of water: when light travels through it, the light rays are reflected and refracted, producing caustic effects on the table's surface. Think about how light behaves on a swimming pool...

B Raindrops and diamonds provide other good examples of caustics, and with these we'll often notice coloured caustics. These come from chromatic dispersion, when light gets separated into its different wavelengths as it passes through. A prism is a classic example of this

C Subsurface scattering occurs when light penetrates the surface of a translucent object and gets scattered and reflected a number of times inside the material before leaving at a different angle. Light is actually being reflected back under the surface, which creates that illuminated effect

What time is it?

Artist website: www.rochr.com

As we all know, light changes at different times of the day, both in terms of position, intensity and colour. With this in mind, we can illustrate the time that an event in our image is taking place by playing with these factors.

When the sun is low in the sky, eg mornings and evenings, shadows will be long if positioned in direct sunlight. On the other hand, at midday, when the sun peaks in height, our shadows will diminish and the scene will be much brighter overall. As the sun sets, shadows tend to be much softer, and the overall colour will be reddish in tone.

Rudolf Herczog, freelance digital artist from Hungary, demonstrates how positioning a single skylight in your 3D scene can illustrate different times of the day, using a single Maxwell Sun as his light source with his Fisherman's Bastion scene in Budapest.

> "Understanding lighting from both a technical and artistic point of view is most necessary. The artistic side is definitely harder to learn; it's more a question of sense" **István Vastag**

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Mastering light

Production artist at Blur Studio, Alessandro Baldasseroni strives to achieve photorealism every day, using photography and real-world observation. But the artist in him loves to emulate the classic masters

Artist website: www.eklettica.com

What I usually look for in a painting when it comes to lighting is not really the physically accurate representation of it, but how the artist has twisted or emphasised some of its characteristics for artistic purposes. They could have strong narrative and symbolic components like in some of Caravaggio's paintings – and most of the Renaissance paintings – or be totally bound to the rules of colour harmony in order to convey emotion, like the Impressionists or Romantics were. Whatever the scenario/feeling is which you want to communicate with light, it has almost certainly already been faced by one of the masters in the past. It's up to us to look and be inspired by those that match our own sensibilities and expressive needs.

Landing (right) was created as a personal project following Blur Studio's work on TimeGate's *Section 8* game cinematic. The main light source is a warm sunlight in an outdoor environment with plenty of indirect orange from the sky. The red-orange environment shadows tend to follow the direction of a desaturated blue, due to the blue-purple area of sky. For the mood and lighting of this image I was mainly inspired by the Orientalist painting *Pollice Verso*, by Jean-Léon Gérôme, as well as paintings by Eugène Fromentin. In *Pollice Verso*, the environment is an arena, with the rays of light on the floor suggesting that there is some kind of structure partially covering the floor. The whole structure produces lots of bounced light in the environment itself. As you can see, the artist chose to have a fill light generated by bounces on the sandy ground; the yellowish colour of the arena itself is shifted to a saturated orange, while the shadows are a more saturated green. We might expect the shadows to be a desaturated blue for the rule of complementary colours, but what really happens in the painting is that the blue of the shadows is mixed with the bounced yellow-orange fill light, and the result is that desaturated green.

The mood and lighting of *Landing* was inspired by paintings by Jean-Léon Gérôme and Eugène Fromentin

Pollice Verso by Jean-Léon Gérôme

© Image created as fan art for TimeGate's Studios' *Section 8* game cinematic. www.timegate.com

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Real-world references

References are an essential part of any artistic practice, and when it comes to lighting you'll need good sources to achieve your desired results. Observe the real world. Remember that everything we see is light. "After having reached the conclusion that light is everything, I no longer make a distinction between material and light," José Alves da Silva explains. "The only question I have to put to myself while creating a 3D image is: how is light behaving here?"

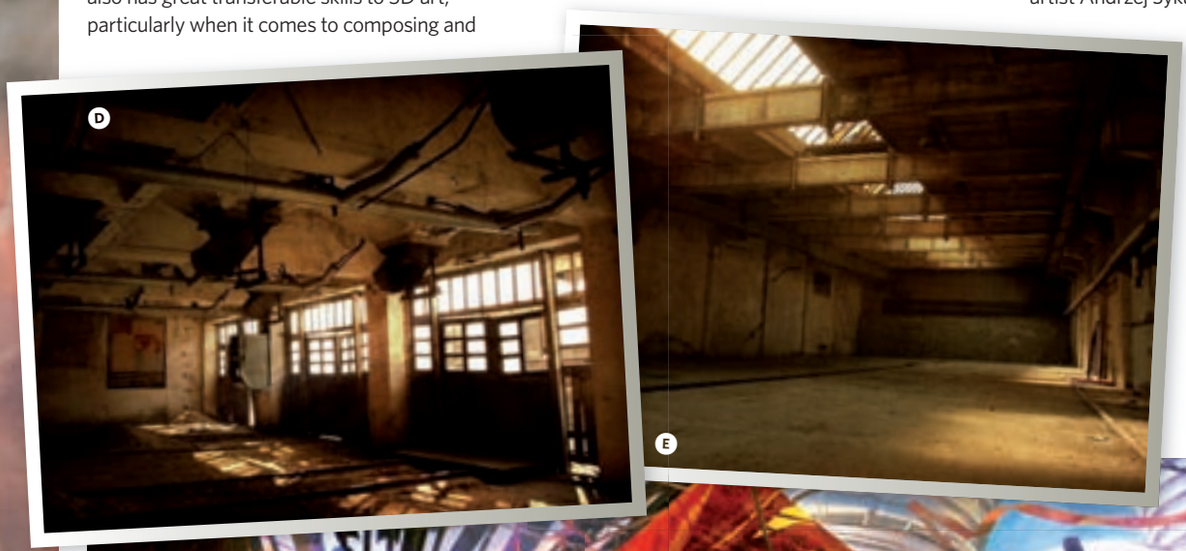
A photograph is captured light, and it's the same with our 3D: what we see is the result of controlled light entering a virtual camera. This makes photography an ideal reference for lighting, especially since cameras capture light just as our eyes do. If you can find photos of materials under the same lighting scenarios that you want for your scene, these will be invaluable to you, but re-creating lighting situations in real life or taking your own photos will really help to develop your understanding of how it all works. Photography also has great transferable skills to 3D art, particularly when it comes to composing and framing shots, so generating your own references is a good practice to get into the habit of.

> "Photography, in my opinion, is probably the most accurate way to understand the physical behaviour of light, after direct human eye observation" **Alessandro Baldasseroni**

Photography is essential for those with photoreal ambitions, but traditional paintings can also offer inspiration for your lighting. Artists' interpretations of reality can encourage you to look more creatively at your work, to make use of light that may not occur naturally but will enhance an idea or better tell a story. If you're working in stylised or fantasy art genres then looking at how traditional artists portray light to convey mood and create dramatic atmosphere will be fantastic inspiration. Composition and colour harmony are also perfectly sampled in classical paintings.

Considering how lighting is used in the theatre on stage sets should also push your mind to think more about how light can create mood, enhance characters' personalities and tell stories. "Theatre lighting is real-life art," José comments. "The light reacts in a physically correct manner, but their main intention is to set a mood. This places it between painting and reality – and isn't that what we do in 3D?"

Explore books, magazines, stock photography websites and other artists' online portfolios to get a broader insight into how light is used to convey messages in images. Watch movies too – there are lots of lighting tricks used in them. Freelance 3D artist Andrzej Sykut says, "VFX breakdowns for movies are sometimes full of gems, even if somewhat hidden or not obvious!" Get your camera out, visit art galleries and museums – don't just rely on what Google offers. As your understanding of light develops, you'll start noticing real-world scenarios more and more. With an open mind to how light interacts with the world around you, you'll start to grasp how you can utilise light to the best effect in your 3D projects.



DEF The discovery of how light falls through the cracks and windows of an abandoned building in Andrzej Sykut's photographs is evident in his 3D illustration, *Trip to the Souk*. Although in the sci-fi genre, the lighting scenario is wholly believable through the way light interacts with the 3D environment

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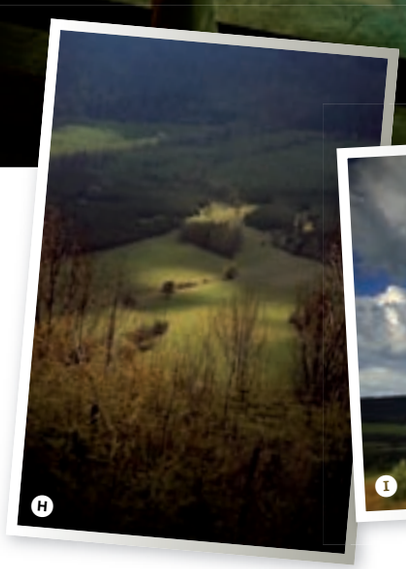
G *Secret Agent* © Andrzej Sykut



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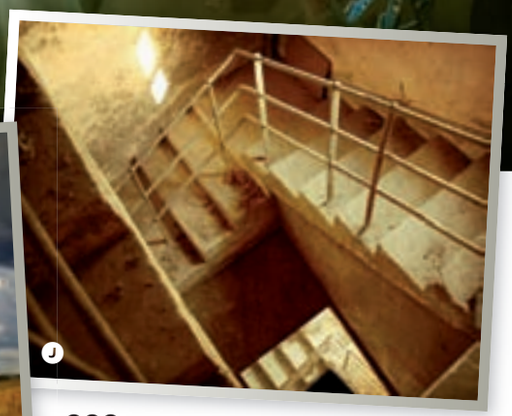

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H I J
Andrzej Sykut has a passion for photography that transcends into his 3D illustrations. By exploring the world with his own camera we can clearly see how his photographs inspire his 3D work in terms of lighting, colour and atmosphere, as well as framing and composition

Applying it all to your 3D

When it comes to applying what you've learnt from the theory and real-world references to your 3D practice, keep in mind what you want to achieve and the message you're trying to convey. Remember your observation of how light interacts with surfaces, scatters through translucent materials, bounces in indoor environments, changes with temperature and position, and the relationship it has with the shadows it casts. In 3D, we're simply trying to replicate the same behaviours, so take time to get the material properties and surfaces right to ensure the lights in your scene will respond how you want them to. "I look at references and try to recognise the 'key' light source, its direction, strength, colour and size," Andrzej Sykut explains. "Looking at shadow direction can also be very useful."

Working out your composition early will go a long way to helping you place the lights, deciding how strong they should be, and even their colour/temperature. "Light will define the values and the colours so it should be studied at the same time as the composition, which is at the very beginning of the creation," insists José Alves da Silva. "It's not unusual for me to use some rough props to start studying the light and only then begin detailing the models. This is also a time-saving trick as from the very beginning you'll know where the viewer's eyes will focus, so will only need to detail those areas."

For beginners, it's almost impossible to produce believable lighting in 3D if you don't know how to set up a linear workflow. Monitors have a gamma distortion that needs correcting in order to achieve lighting scenarios that we'd expect in the real world. Using mental ray and V-Ray, setting the Gamma Correction to 2.2 will do the trick, but if you're unsure then a Google search of 'linear workflow' will bring up tutorials and advice on how to set it up for your software. Also keep in mind that lights decay in reality. You won't come across light that travels with the same intensity from its source to infinity, and neither will it decay linearly. In 3D, use IES lights, or lights with Inverse Square decay, to follow real-world rules. Everything will become much easier once you follow nature's lead!

Your light setup will depend on the kind of image you're creating. "You can break down many, many situations into a combination of key, fill

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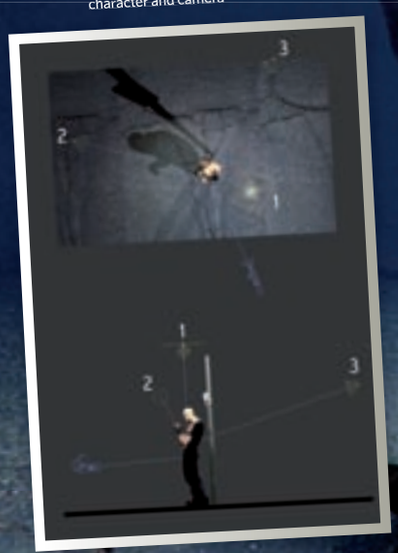
Barrio Guy © José Alves da Silva

We can see how José's light sources have been set up in relation to the character and camera



Location, feeling and style

Freelance character artist José Alves da Silva takes us behind the scenes of his Barrio Guy image with a look at his lighting setup and a breakdown of the render passes

Artist website:
http://josealvessilva.daportfolio.com

The character is located in a very simple scenario under a streetlamp, so it's necessary that the viewer's aware of the lamp, even though it's not in the image. I wanted the character to look menacing, so the absence of light is also important; long shadows falling from above and completely dark areas, especially on his face, help to convey some discomfort. For the style, the character was intended to be a live cartoon, so the colour code had to follow some comic language, such as high contrast, dark areas, rim lights and bold colour.

Using V-Ray as my render engine in 3ds Max, my first concern was to correct the gamma of the monitor display to see the images in a clear way. Go to Preferences, enable the Gamma/LUT correction, turn on Affect Color Selectors/Material Editor and change the Bitmap Files Output Gamma to 1.0 in Max. The next step in V-Ray is to go to the Color Mapping options and change its type to Gamma Correction, setting the Gamma value to 2.2. Be sure to set the V-Ray VFB (Virtual Frame Buffer) on so that you can see the correct colours when rendering, because 3ds Max's Render Frame Window will display the colours incorrectly.

Four light sources were used in total: a Key/Main light (1), a turquoise-green Spot light (2), a Rim light (3) and a dark blue environment light (4) was used as a fill light. With the lights set up and in place, I rendered each in a separate pass, as well as an Occlusion (5) and Z-Depth (6) pass.

In Photoshop, I placed the light passes on top of each other with the Linear Dodge (Add) blending mode. This method is great because you can adjust each layer's intensity to fine-tune each light individually; you can even change the colour without needing to re-render. The Occlusion layer was applied with the Multiply blending mode to add extra shadows and dirt, and the Z-Depth layer was used to mask a layer with the background colour to make the ground fade into the distance.

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01 The Key/Main light render pass simulates light from a streetlamp. For the light setup, I created a white VRayLightPlane at 50 x 50cm coming from above, but slightly to the right in order to create long shadows and keep the left side of the character in darkness

02 This shows the green Spot light coming from the left, hitting the surface at a grazing angle to reveal sculptural details and define the character. This was placed to leave an unlit area between the green and main white light, with its Decay Type set to Inverse Square

03 The Rim light render pass shows how the light was created on the right to strengthen the character's silhouette. I also set the Decay Type to Inverse Square and chose a light orange colour. As the right side was already lit, this addition will result in a warm, bright rim

04 This reveals how the environment light works. In the V-Ray settings I set the environment to a very dark blue with Global Illumination on. This acted as a dome light, with dark blue coming from all directions. With the background also dark, the character really 'pops'

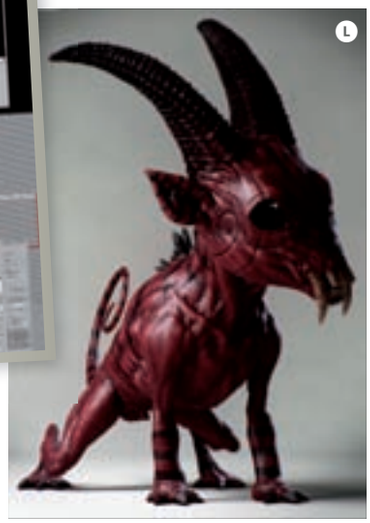
05 An Occlusion pass was rendered to add extra shadows and dirt when layered with the light render passes within Photoshop

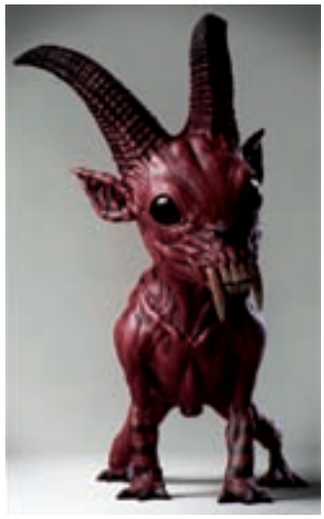
06 Finally, I rendered a Z-Depth pass so I could make a mask of the background to enhance the depth of field in postproduction

and rim lights," Andrzej Sykut comments. "Of course, you can have two key lights, many lights acting as fill, some as rim, but they still fall into one of these three basic categories."

For character portraits you'll most likely need a strong main light for the face to convey the right emotion, with some complementary coloured fill lights to fill in darker areas. Remember that with character portraits the eyes will be a key focal point, so getting some reflection in them will help – this may require additional lights.

With full character illustrations, as well as the main light and fill lights you might use for a simple portrait, you could bring in some rim lights to outline your character and separate it from the background. With realistic environments, on the other hand, you'll need to mimic natural lighting, so a dome light set to a sky colour will be an effective solution, or you could use an HDR image. A direct light with decay can simulate sun/moonlight, and Global Illumination (GI) will be particularly helpful for interior scenes where there will be lots of bounced light. "Most real-life light sources are area lights," Andrzej Sykut mentions. "If possible, try to use them – they look so much better!" Moving into the fantasy/sci-fi genres, creativity really opens up and you can be more unconventional. Experiment; discover how different lights work in various positions and colours, and how they interact with surfaces and objects. Once you get a feel for how everything works in the 3D space, you can start to push the possibilities. "I do nothing more than a photographer," Maurice Panisch says. "But I have one big advantage in that I can create every light I need, and I can bend reality."





K L Here is an example of a production asset in a simulated studio lighting situation using a three-point lighting system: a key light on the left is the main source of light, plus a blue sky light and an HDRI map which acts as an overall fill light. Usually you can light an entire scene using just an HDRI

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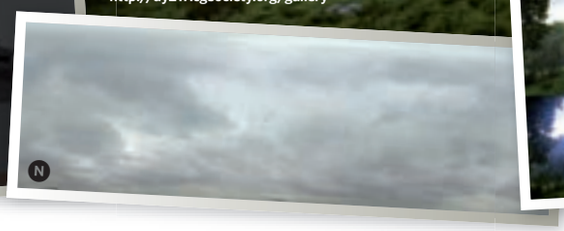
© István Vastag
http://dy217.cgsociety.org/gallery

M The main illumination in István Vastag's *Kiyosato* architectural scene comes from a spherical environment texture from CGTextures.com. An additional large VRayPlane was used in the scene to simulate weak sunlight



N István created a big sphere around the scene and applied a VRayLight Material to it, assigning this sky texture to the colour slot. With this method he could easily adjust the part of the sky he wanted to see, simply by rotating the sphere into the right position

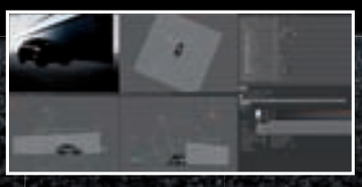
O Everything was rendered in one pass. István says he was once told, "Raw renders are like a rough diamond." He therefore does a lot of tweaking in postprocessing, such as adding glow effects, enhancing foliage, colour correction and grain

> "I often check each light separately: turn off all the others, and render. That makes it easy to spot the influence of each light" **Andrzej Sykut**

© Maurice Panisch
www.maurice-panisch.de

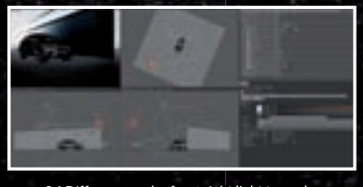
Maurice Panisch's CINEMA 4D scene contains a total of seven lights: the master sun light is an Infinite light with Area Shadows on; three Omni lights cast specular light and no diffuse to give a metallic feel to the car; and three different-sized Area lights mimic the diffuse light coming from the environment. For reflections, he used an HDRI Sphere to match the backplate

01 Specular front right light turned on

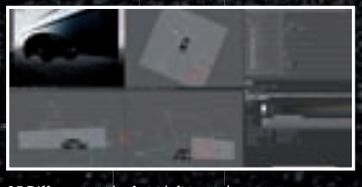


02 Specular top side light turned on

03 Specular front left light turned on

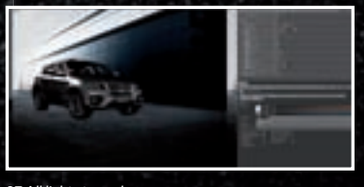


04 Diffuse specular front right light turned on



05 Diffuse specular front left turned on

06 Diffuse specular rear top light turned on



07 All lights turned on

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> I enjoyed modelling characters much more than environments or props, and I gradually improved to go on to be a character specialist at everywhere I have worked since

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Lynette Clee talks to Andrew Hickinbottom, a lucky-in-freelance character modeller currently getting creative under the bright city lights of London

B

.Perfect pinups

> My predominantly pinup-themed personal work is an outlet for when I want to create something easy on the eye and different to most of the work I get paid to do
>
> **Andrew Hickinbottom** is a freelance character modeller

Name Andrew Hickinbottom
Job title Character modeller
Personal website http://andyh.cgsociety.org http://andyh.cghub.com
Location UK
Expertise Characters
Software 3ds Max
Client list Coca-Cola, International Olympic Committee, Comcast, Panasonic, SEAT, Imagination Games, Actimel, Haven Holidays

All images © Andrew Hickinbottom

A *Suzie Kickin' Back* is an illustration of my Suzie character lazing about

B *Bunny Girl* is one of my most successful personal pieces to date

Andrew Hickinbottom recently made the big move to London, and things are looking up. With so many major production companies in the big city, he's always bumping into people who've been working on high-profile projects that he's long admired, which makes life a lot more exciting and has, in turn, given his art a new lease of life. With a lot more work going around in London compared to back in his hometown in the Midlands, he is currently freelancing as a character modeller for regular clients, such as Nexus Productions, where he models, UVs and occasionally textures characters. Before, he worked remotely from Birmingham – the move means he can now work on site, and be inspired by all the capital has to offer the 3D artist!

3D Artist: *How did the contract at Nexus come about – can you tell us more about the projects you've been involved with there?*
Andrew Hickinbottom: One of the 3D leads had been trying to get me to work with them for some time after seeing my stuff on the internet. I did some character modelling on a Coca-Cola advert a few years ago, then an Olympic Committee ad, and now they are regular clients. Nexus does work for advertising mainly, but has done title sequences for TV and film, music videos and short films as well. The company has a large collective of award-winning directors and can produce content in differing styles: 3D, 2D, live action, stop motion, etc.

3DA: *You worked on a high-profile project at the London-based Superfad in December. Can you tell us more about that?*
AH: They needed me to create a stylised likeness of Shakira for a SEAT car advert. Getting Shakira's likeness, and the overall level of stylisation approved was tricky. I liked the end result, but after all that work, you only saw her for a few seconds, and somewhat small on the screen – I guess it's because there was just so much crammed into the advert and my character was just a small part of it.

3DA: *Have you worked in any other cities, either here in the UK or abroad?*
AH: I did a small job in Valencia for a month in January, which was nice – that's the farthest I've travelled for a job. Some work in Japan would be good though!

3DA: *As a freelance artist, how do you find work? Do you find it or does it come to you?*
AH: I'm quite fortunate: virtually every freelance job I have done has landed in my lap. I have yet to chase down ideal clients. It's something I intend to do in the future.

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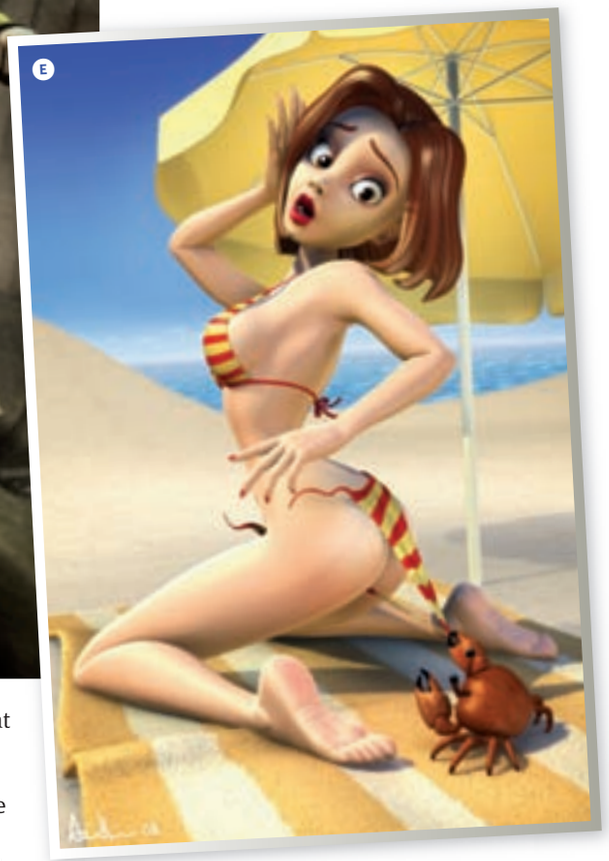

E

3DA: *What was the pivotal moment when you knew that character modelling was your thing? How did it all start?*
AH: At the first studio I worked at many years ago I was the texture specialist, then I gradually found out that modelling was my most useful skill, having been doing it as a hobby since my late teens. I enjoyed modelling characters much more than environments or props, and I gradually improved to go on to be a character specialist at everywhere I have worked since. I've always admired aspects of character design – ever since I watched cartoons as a kid.

3DA: *What software have you mastered in your career so far as a character modeller, and why have they been your tools of choice?*
AH: 3ds Max, pretty much. I've used Maya, Softimage and LightWave in various capacities during my many years at different studios, but I've been using Max the longest, and I can't really imagine using anything else at the moment. It's nicely laid out, quick, easy to understand and has some great modelling tools – especially the new graphite modelling tools in Max 10.

3DA: *You've also recently started using ZBrush and V-Ray. How's that going and what kind of new possibilities are they bringing to your work?*
AH: It took me a while to get used to ZBrush's unusual interface and I have only learnt the basic tools so far, but it's certainly a powerful program. It's all too tempting to go nuts and ramp up the detail, creating a clichéd dragon monster or old man, but I'm going to strive to keep my simplistic style and take advantage of ZBrush's mesh manipulation and refining tools, rather than going down the realistic route. Sculptris is a good alternative to ZBrush, and it's free. V-Ray is great – especially for lighting – although I'm still pretty new to it right now.

3DA: *Your pinup characters are possibly what the 3D community know and love you most for. Would you be happy to tell us a bit about your workflow when creating a 3D character illustration?*
AH: My predominantly pinup-themed personal work is mostly an outlet for inspirations that gather in my head, and for when I want to create something easy on the eye and different to most of the work I get paid to do. If I see some artwork that I admire, or if I see things in real life that inspire me, I try to create an illustration or

> "Once I have started and got past the difficult "Is it going to work?" part, I get swept away and won't stop until it's finished!"

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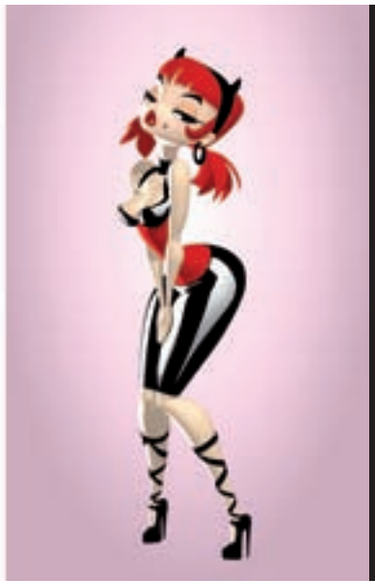
Trixie is a kinky character inspired by Shane Glines' retro pinup cartoon girls



Key Project 1

Trixie

I wanted to make a character in a similar style to Shane Glines' or Bill Presing's pinup work: nice and simple, quite shapely, and in a retro kind of way. Some retro-styled cartoon art doesn't really translate well to 3D as the shapes are abstracted depending on the camera angle, pose and composition.

I built the model fairly quickly without much detail, focusing on the simplicity of the shapes and the appeal. The lighting was very ordinary: just a Key light, a Back light and an Ambient light to flatten the scene. Her PVC clothes used a simple raytraced shader to reflect a bright white plane I positioned off-shot to get the white, shiny areas.

I'm really pleased with the results, and I think it's my best work so far. It reflects what I'd like to see in CG more: more innovation with the look and style of 3D characters. No super-realistic lighting, dynamic hair or advanced shaders, just nice, simple characters. Getting a flat, illustrative look without cheap use of a cel-shader is quite fun and can be approached in so many ways.

character based on these different influences. I have to act quickly, though, because I sometimes lose the drive to do unpaid personal work when the initial spark has gone from my mind. However, once I have started and got past the difficult "Is it going to work?" part, I tend to get swept away and won't stop until it's finished!

3DA: *How do you keep yourself motivated until that point? Any tips for those struggling to see a project through to completion?*
AH: I find it useful to keep a note of ideas that spring into my head wherever I am – a text file on my phone usually does the job. I add things to it if I get sudden ideas. Taking pictures can be useful for reference if I see anything that can help, such as composition, interesting people or lighting schemes. Keeping inspired is definitely the key! I'm always looking around on sites like CGTalk and CGHub for new and exciting artists to be inspired by.

3DA: *The dynamic poses of your cartoons are what bring them to life. What kind of research do you have to do and references do you need in order to pull this off?*
AH: Looking at the posing and construction theories of good old cartoons – *Tom & Jerry, Bugs Bunny,* etc – help you understand how they simplify the forms of the characters to create clear poses. Model sheets for animated films are good reference as they show varying poses and expressions. Pinup, glamour and adult photography/art in general is good reference, too – having some dodgy pics can genuinely be 'reference', despite the old joke!

3DA: *Your work is popular with CG publications, like the Ballistic Publishing titles. Can you tell us what kind of benefits having your work printed in the likes of EXPOSÉ can bring about?*
AH: Surprisingly, as far as I'm aware, I have not had any job offers directly connected to my work being in print yet. Nevertheless, it's cool seeing your work on paper, especially when you are among so many great artists in the same book. I suppose having your work in books and magazines can only be good for exposure and getting your work circulated and known among potential clients.

3DA: *Are you working on any new personal projects at the moment? Can you tease us with any info on these?*
AH: Since moving to London I have had quite a few ideas for personal work, but I don't have much time to work on anything. I recently made a new character that was inspired by random girls who I've seen around London in nice weather. It's a bit more of an ordinary, slice-of-life piece rather than a pinup.

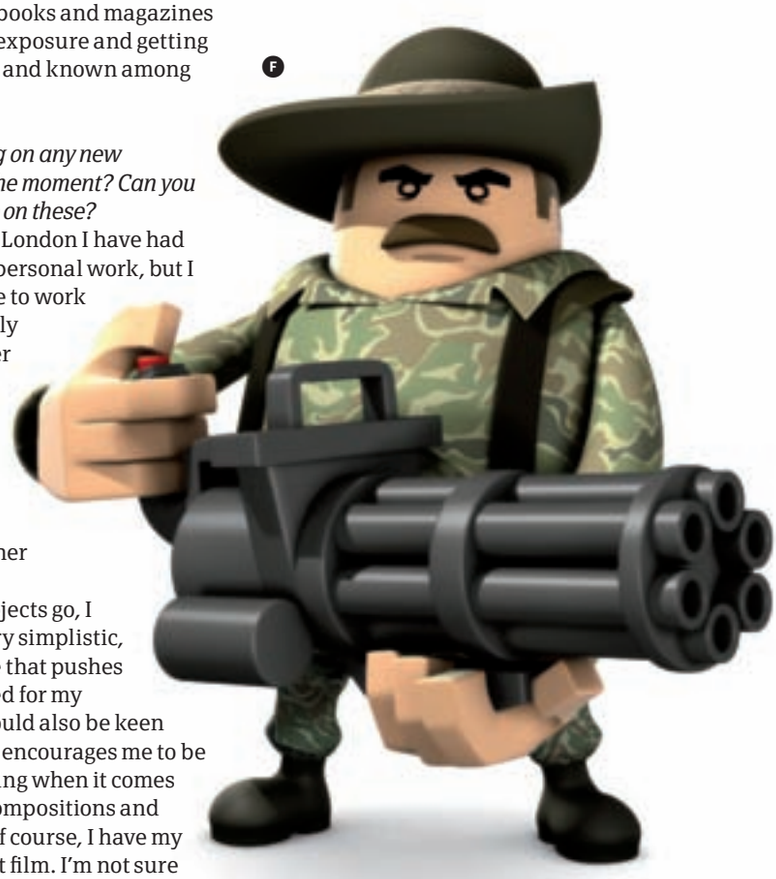
As far as future projects go, I would like to do a very simplistic, flat, illustrative piece that pushes the look that I adopted for my Trixie character. I would also be keen to do something that encourages me to be bolder and more daring when it comes to my proportions, compositions and colour choices, and of course, I have my long un-worked short film. I'm not sure if I want to pick up the pieces and carry on with it or not.

C *Grannies* was my honourably mentioned entry for the CGTalk 'Spectacular' competition

D Family characters made for the board game Beat the Parents

E *Suzie & the Lil Nipper* is a Gil Elvgren-inspired illustration of my ongoing Suzie character

F This figure was created as a collectible vinyl toy-style soldier design



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This was my first attempt at a caricature: Thom Yorke from Radiohead

Key Project 2

Thom Yorke

A website of which I'm a member (**www.b3ta.com**) does weekly challenges where you are given a subject, and invites people to Photoshop them in creative ways. One week the theme was: 'Photoshop Thom Yorke from Radiohead'. I thought I'd enter and try my hand at caricature for the first time.

As the image challenge only runs for a week, I had to work fast. It was quite fun to do as I was only creating this one image – no body was modelled, no morph targets or rig, just quick, dirty modelling and plenty of cutting corners. I experimented with mental ray for the first time on this image and tried using Final Gathering and Subsurface Scattering.

I'm pleased with the results, and it was a special project for me as I had to work quickly, didn't have time to obsess over every detail like I usually do, and it was my first attempt at a caricature.

G

3DA: *We would love to know more about the short film – can you tell us how this started, where you're at, and how you'd like to see it go in the future?*
AH: I had an idea for a simple short film featuring my office girl, bunny girl and office nerd characters shortly after I made them. I had the whole thing storyboarded, laid out, modelled, lit and ready to go about three years ago. I fine-tuned the composition, pacing and story through animatics and storyboards. When I got to the animation stage, I realised I lacked the experience to make it look as good as I wanted. I would have liked to do the whole thing myself as a challenge, but it's an impossibility. I may revisit it, but I would have to find an animator who is motivated, talented and, above all, someone I know well and trust. The three characters I made are about five years old now – I'm worried that they may look quite dated. Maybe it's time to do something new.

3DA: *What kind of resolution do you work in, and how does your hardware handle the job? Can you tell us a bit about your current setup?*
AH: To be honest, due to the non-realistic nature of my work, and the fact that I don't use advanced rendering and shading much, I don't really need a very powerful hardware setup. However, I recently replaced my four-year-old computer, so now things are a lot faster to work with, and it encourages me to use V-Ray more as the render times are drastically reduced. My output resolution varies, but I usually make my images big enough for print, should they ever appear in a book or magazine at some point. I rendered my Trixie character out in a huge resolution, though, as I intend to do some large posters, canvases or prints for sale in the future.

3DA: *At the end of last year you went travelling around Japan and then spent some time in Valencia. How important is it as a visual creative to experience the world?*
AH: Well, I was in Valencia to work, not for a holiday, but yeah, it's important to take a break and recharge your creativity if it gets in a bit of a slump, as mine often does. You see a lot of interesting things travelling, and sometimes you get ideas. Being away from computers for a while also helps!

3DA: *Can you tell us about your artist inspirations and what influence can you see from them in your own work?*
AH: I love the work of Shane Glines. I find

G *Maid with Love* was inspired by visits to maid cafés in Tokyo

H *Tokyo Girl* was inspired by Harajuku teen fashion

I *Debbie* was inspired by random girls that I've seen around London this summer

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> “Taking pictures can be useful for reference if I see anything that can help, such as composition, interesting people or lighting schemes. Keeping inspired is definitely the key!”

the streamlined construction, retro stylings and the flow of the shapes on his characters fascinating. Bill Presing, Dean Yeagle and oldies like Dan DeCarlo and Gil Elvgren are some of my main influences too. I have many influences and favourite artists.

3DA: *Your main inspirations are 2D, so how about 3D art inspirations – who do you tend to follow/admire most in the 3D community?*
AH: Although a lot of my design sensibilities and inspirations stem from 2D art and illustration, I do admire some 3D art. Like most 3D artists, I find Pixar a big influence – especially its human characters, as seen in films like *The Incredibles*. Certain films click with me design-wise, eg *Cloudy with a Chance of Meatballs*. I loved the loose, rubbery and cartoony look of that – they really pushed it and made it stand out. Generally, though, I tend to follow a handful of 3D artists in the community – the majority of stuff I like is from random artists.

3DA: *What's next for you – or what would you like to see on the cards for 2011?*
AH: More illustration/print work. I find it more satisfying being in creative control over the character, the composition, the theme and the overall design treatment. It's less technically minded and meticulous than making characters for animation too; if it looks good for the purpose of a still image you can cut corners and generally work faster. I intend to improve my drawing as I feel it would make me a better artist. I've been attending the great Dr Sketchy burlesque life drawing classes in London because they're a bit more relevant to my pinup work, and just because they're fun!

I would like to get my website back online, and perhaps put some prints/posters up for sale. After seeing the results of a recent 3D print of my Trixie character I had made, I would love to get a collectible figure/sculpture made for sale at some point in the distant future. Generally, I can see things being more exciting and fulfilling in the future now I have moved to London. I've just got to focus and stay productive!

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Grand designs

Wholey Building
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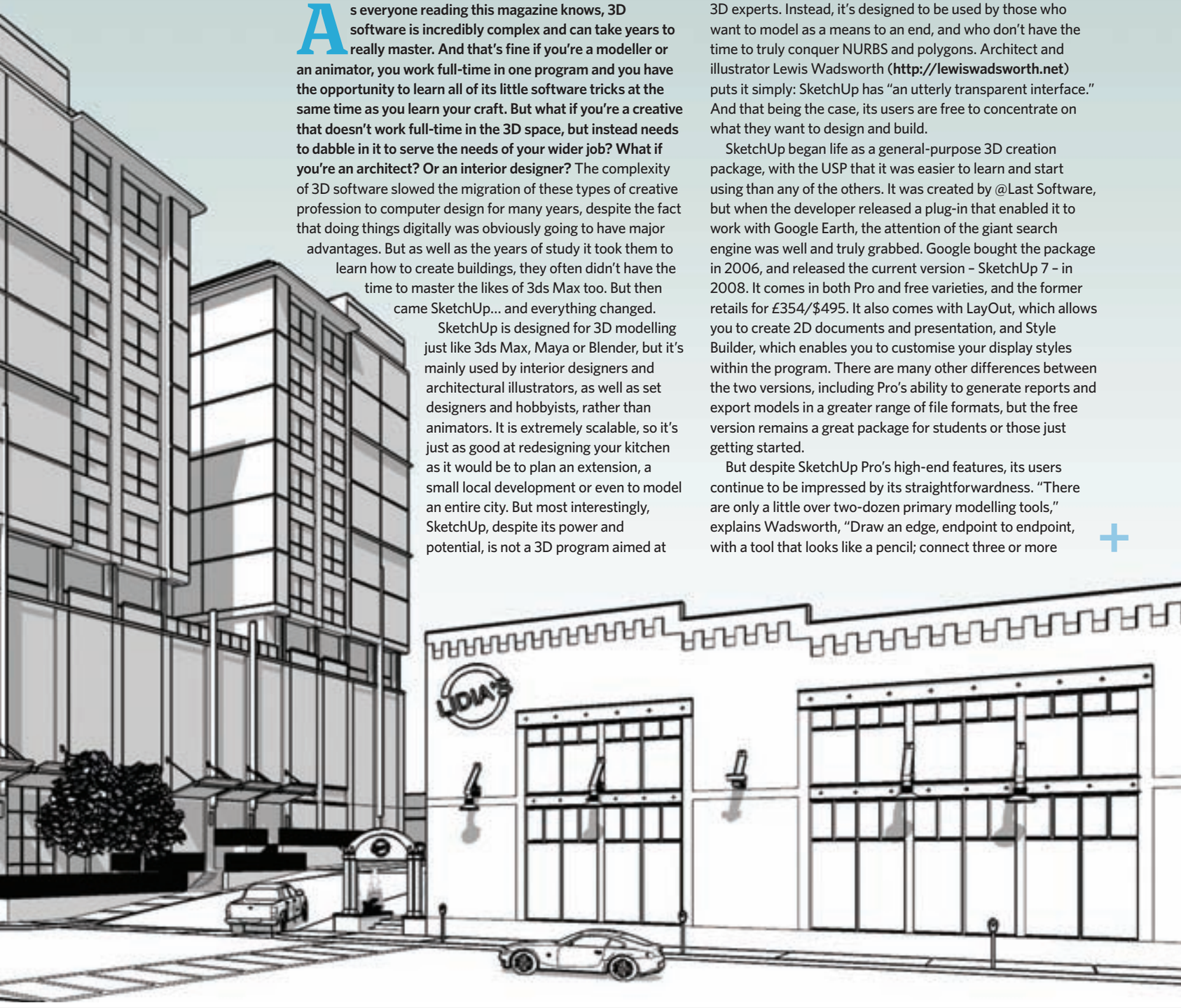
Disregarded by 3D purists as being feature-light, Google's SketchUp Pro is taking swathes of new creatives into the 3D world. **Poz Watson** discovers why architects and interior designers are leading the charge

As everyone reading this magazine knows, 3D software is incredibly complex and can take years to really master. And that's fine if you're a modeller or an animator, you work full-time in one program and you have the opportunity to learn all of its little software tricks at the same time as you learn your craft. But what if you're a creative that doesn't work full-time in the 3D space, but instead needs to dabble in it to serve the needs of your wider job? What if you're an architect? Or an interior designer? The complexity of 3D software slowed the migration of these types of creative profession to computer design for many years, despite the fact that doing things digitally was obviously going to have major advantages. But as well as the years of study it took them to learn how to create buildings, they often didn't have the time to master the likes of 3ds Max too. But then came SketchUp... and everything changed.

SketchUp is designed for 3D modelling just like 3ds Max, Maya or Blender, but it's mainly used by interior designers and architectural illustrators, as well as set designers and hobbyists, rather than animators. It is extremely scalable, so it's just as good at redesigning your kitchen as it would be to plan an extension, a small local development or even to model an entire city. But most interestingly, SketchUp, despite its power and potential, is not a 3D program aimed at 3D experts. Instead, it's designed to be used by those who want to model as a means to an end, and who don't have the time to truly conquer NURBS and polygons. Architect and illustrator Lewis Wadsworth (**http://lewiswadsworth.net**) puts it simply: SketchUp has "an utterly transparent interface." And that being the case, its users are free to concentrate on what they want to design and build.

SketchUp began life as a general-purpose 3D creation package, with the USP that it was easier to learn and start using than any of the others. It was created by @Last Software, but when the developer released a plug-in that enabled it to work with Google Earth, the attention of the giant search engine was well and truly grabbed. Google bought the package in 2006, and released the current version – SketchUp 7 – in 2008. It comes in both Pro and free varieties, and the former retails for £354/$495. It also comes with LayOut, which allows you to create 2D documents and presentation, and Style Builder, which enables you to customise your display styles within the program. There are many other differences between the two versions, including Pro's ability to generate reports and export models in a greater range of file formats, but the free version remains a great package for students or those just getting started.

But despite SketchUp Pro's high-end features, its users continue to be impressed by its straightforwardness. "There are only a little over two-dozen primary modelling tools," explains Wadsworth, "Draw an edge, endpoint to endpoint, with a tool that looks like a pencil; connect three or more



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Thiel Chapel
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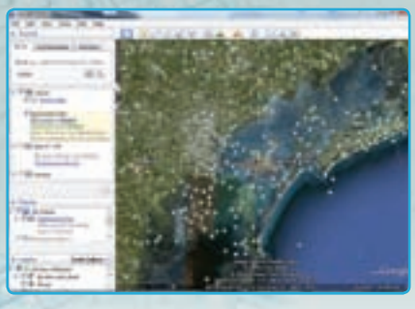
Go global with Google Earth



Being part of the Google family means that SketchUp integrates happily with Google Earth, allowing you to utilise a world of data into your own projects. Architect Lewis Wadsworth explains that the combination is "very useful for conceptual work. It's simple to import a bit of the virtual globe, terrain and satellite-photo texture into SketchUp, if I don't have enough survey information for a project or if I need a site model fast."

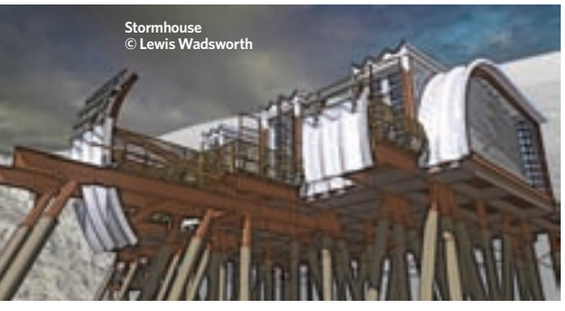
Wadsworth made use of Google Earth on a project he calls *Stormhouse*, which won the 2009 BSA Unbuilt Architecture Award. As a structure located on Deception Island, just off the coast of Antarctica, Wadsworth obviously couldn't visit himself and "could only find some dated surveys of the site, so the immediate local terrain you see in the rendering is in fact largely imported from Google Earth into SketchUp." Alternatively, as with 3D Warehouse, you can turn your hand to a bit of geo-modelling, and use SketchUp to create elements to be included in Google Earth. The world is your oyster after all...

Palazetto
© Lewis Wadsworth

+ edges, and bang, you get a surface! Hit that surface with the Push-Pull tool and you turn it into a volume... Draw an edge on a surface in SketchUp and it splits it into two surfaces... Push two objects up against each other and they become one object."

Argentine Ricardo Cossoli is a partner in Three Dimensions (**http://threedimensionsarg.blogspot.com**), a company set up in 2008 to provide high-end architectural images for real estate and construction. He is a big fan of SketchUp too, and says, "We always try to make the best quality images possible, regardless of the size of the project, whether a small cottage or a large apartment building... and we use SketchUp for everything from design to modelling an entire project, not using any other modelling program." Using SketchUp end-to-end isn't an option for everyone though, and many companies and individuals use it as one component part in their workflow. For instance, Adam Warner, a freelance designer who specialises in architectural illustration, explains, "Larger projects always start with SketchUp, are pushed to SketchUp's polygon limitations, and are then taken into a program like 3ds Max to add some of the more CPU-intensive items such as vegetation, cars and other high-poly-count items. At times, I also use Rhino to make more organic-looking elements."

> "Larger projects always start with SketchUp, are pushed to SketchUp's polygon limitations, and are then taken into a program like 3ds Max to add some of the more CPU-intensive items such as vegetation, cars and high-poly items"



Stormhouse
© Lewis Wadsworth

So why is SketchUp so loved, given that most of its users admit that they have to use other programs as well to get their work done? Greg McHugh, from a home furnishings and interior design firm in Washington state (**www.ksfhome.com**), says simply: "I hate changing software – but the first date with SketchUp won me over. It was so easy to learn and very intuitive." Tim Sloat, senior designer at Lowney Architecture, tells a similar story: "We began playing with it four years ago when looking for an alternative to Revit's clunky concept design tools and it quickly became the concept and schematic design tool of choice."

But simplicity alone is not enough to account for the app's success. As Wadsworth notes, SketchUp backs this up with "a sort of intelligent second-guessing. The application only presents you with the tools that are applicable to the job at hand." And of course, in a depressed economy, ease of use equals speed of use, which means it

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© Adam Warner/Desmone & Associates Architects

costs less. McHugh's firm is a small one, and it recently partnered with a medium-sized architectural firm on the pitch for the $13 million expansion of the Lucky Eagle Hotel. "We participated in a competitive design contest against a much larger architectural firm. I produced interior room designs with SketchUp and Artlantis. I collaborated with another designer at the architectural firm which had just introduced its staff to SketchUp. He primarily focused on the building exterior. We produced some very impressive presentation materials in a three-week period." Needless to say, they won the bid.

Of course, the great thing about working with a program like SketchUp is that you can tailor it precisely to your needs by making use of all its Ruby Scripts and plug-ins. "If you combine the native tools with several of the great scripts written by talented developers on the SketchUp forum, you have a pretty powerful arsenal of modelling tools at your disposal," notes Warner.

But perhaps the real reason that SketchUp has become the de facto tool of architects and set designers alike is that by being first and foremost an intuitive program, its users can forget about how they create things, and concentrate solely on creating them. Wadsworth says, "If I have an architectural project in mind, the first thing I do is open up SketchUp on a PC and start modelling stuff. I almost said 'sketching stuff', but really with SketchUp the one is the other. The software's name is not inappropriate." Sloat adds that the program is "unbounded by the need for constant technical input (like most BIM programs require) for free-flowing idea generation.

"It's powerful enough to do professional work but not so powerful that it bogs down one's ability to get fast and 'friendly-looking' results."

SketchUp on the job

Architectural firm Lowney explains how it used SketchUp to design a new Safeway store in Oakland, California

Lowney Architecture (**www.lowneyarch.com**) is a full-service architectural company based in Oakland, California. Senior designer Tim Sloat has been with the firm for five years, and works closely with the boss Ken Lowney, and the architects to "tackle the concept and schematic design" of their projects. The firm specialises in commercial and mixed use projects, as well as restaurants, and one of its largest clients is the grocery retailer Safeway Inc, which has employed them to "design new stores and expansion/remodels in more urban areas and in communities especially sensitive to the need for creating architecture that relates directly to the community."

Oakland Safeway
© Tim Sloat/Lowney Architecture

Oakland Safeway
© Tim Sloat/Lowney Architecture

The design for the new Oakland Safeway (pictured) was primarily created in SketchUp. Expressing his views on the app, Sloat says, "It allows us to quickly experiment, explore and experience design possibilities in three dimensions, almost as easily as drawing by hand. The intuitive and immediate connection between the tip of a pen and one's mind is something that CAD technology has been striving towards for years for the every-day architectural designer; SketchUp has come the closest yet to re-creating that experience." And that ease of use was needed, given that Lowney "not only constructed the proposed project in SketchUp, but also used surveys, aerial imagery and site visits to construct the immediate surrounding context."

Lowney also uses Revit for site plans "and for studying the complicated grade and floor level changes as they related to the project along its block-long length. Sloat admits, "Workflow is a challenge between Revit and SketchUp [since] we can easily export 3D information from one into the other, the state of that information is not always ideal." The team also made use of 3ds Max and Google Earth.

The creation of images to show the community was vital throughout the project, and Sloat notes, "Our SketchUp-generated walk-through movies are our most powerful presentation tool when it comes to communicating the experiential aspects of our designs to clients or the public." The proposed design has been well received and is currently "in the process of being entitled for construction by the city."

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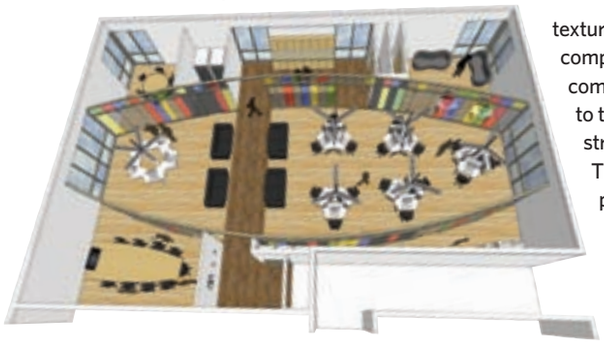
Office Interior © Tim Sloat/Lowney Architecture



textures, simple but effective 'face me' components and seemingly unlimited combinations of 'styles' that we can tailor to the project and client, it's easy to go straight from designing to presenting. The scene tabs facilitate easy 3D presentations to clients, with the ability to manually explore the model in perspective 3D during meetings." And this ease has meant that some users don't even follow the usual model of rendering their sketches into 'finished' 3D models.

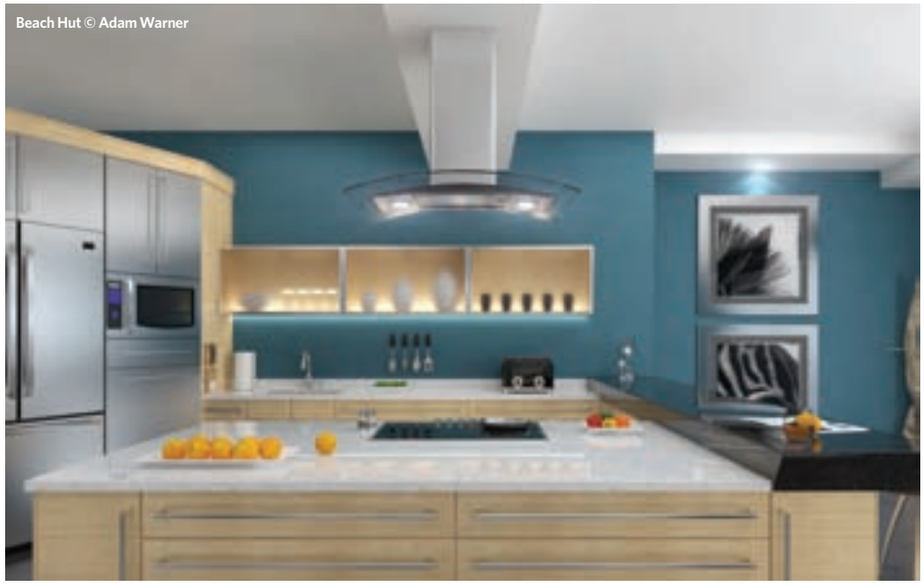
And what Sloat calls "friendly-looking" results are crucial in a situation where you're showing your designs to a wide variety of people – the clients, the planning officers, the public – not all of whom may be familiar with the process. "When I worked for other architects," says Wadsworth, "I found clients could be intimidated by utterly realistic images. They became agitated over carpet colours or curtain patterns, and couldn't see past such triviality to the more important design considerations. That doesn't seem to happen with SketchUp's more 'painterly' images."

And as well as being easy to design with, SketchUp is also easy to present with, so those friendly images can be produced on a regular basis. Sloat adds, "With easy-to-apply and edit

Sloat explains, "SketchUp uses lines as a means of expressing edges and design compositions much the same way one might use lines drawn with a pen. However, once transferred to a true rendering program, all these lines, and the design information they might have been suggesting are invisible and only the faces matter. So suddenly, a building design that relied on lines as a shorthand for window mullions or expansion joints in plaster, etc, becomes a muddy mess. "The lighting might be more realistic and the glass might actually reflect like real glass, but the building must be modelled to a much more detailed level at this stage if it is to achieve legibility."

Of course, once you have put the detail in, your SketchUp designs can be rendered in the

Beach Hut © Adam Warner



Victoria © Greg McHugh

Cork Factory Restaurant © Adam Warner

3D Warehouse

The world is a big old place, isn't it? And if you don't have the time or inclination to model all the buildings that surround the building you're designing, for instance, then just head on over to Google's 3D Warehouse. There you'll find thousands of 3D models that you can download and use in your work – everything from detailed real-world landmarks to more generic components to all the trees, waterfalls and scenery decoration that your heart could possibly desire.

3D Warehouse was designed for the purposes of collaboration, so if you've created something you're proud of then you can also upload your own models to share with other people. And if Google deems them good enough, your models could be included on the 3D building layer of Google Earth. So, whether you want to search or upload, **http://sketchup.google.com/3dwarehouse** is the place to go.

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Savoy Restaurant
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Concert Hall
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traditional way and some fantastic results created, which is what most users do. Arc-vis pro Cossoli says, "To render all of our images we now use V-Ray but started working with a free program called Kerkythea and, briefly, Twilight Render (for beta testers), but we decided to stay with V-Ray because of the successful integration between the programs, when you need SketchUp to be the end software." Warner is a fan of V-Ray (**www.vray.com/vray_for_sketchup**) too: "I use V-Ray for all of my rendering. I couldn't be happier with the results I get from it." Other users opt for Shaderlight (**www.artvps.com**) or LumenRT (**www.e-onsoftware.com/products/lumenRT**).

Despite the affection the architectural community clearly feels for SketchUp, there are features that many wish it had. McHugh admits, "It's still difficult to create more organic 3D items, such as rocks, plants, sculpted, free-flowing items," and Cossoli concurs with this, noting that if there were "more modelling tools then you could avoid having to use so many plug-ins, though this is just personal taste." Warner echoes this plea, and also adds, "Support for proxies, better animation controls, higher polygon count and particle systems" to the wish list.

For Wadsworth, there is another problem: "SketchUp was the first program I used that had real-time shadows – in other words, you could take lighting into consideration while developing your design, and instantly see the results in the application window. But the SketchUp developers haven't really updated the function since I first learnt the program, eight years ago." Other programs have pushed this technology dramatically forward, and Wadsworth wishes "Google would deal with this, or dump the whole 'real-time' shadow idea in favour of a quick rendering system that would generate shadows from multiple light sources. For my work, I really don't need reflections, raytracing, global illumination or anything like that. I just want to be able to place some light sources in my SketchUp model to see how the lighting affects my design and where the shadows fall."

So while some programs may hungrily add features with every new release, SketchUp's appeal to the architectural audience seems to lie in its continued simplicity. And with rendering tools, connection to Google Earth and Warehouse 3D and the vast array of scripts available online – might its charms begin to appeal to the wider 3D community? Perhaps.

> "Despite the affection the architectural community clearly feels for SketchUp, there are features that many wish it had. McHugh admits, 'It's still difficult to create more organic 3D items, such as rocks, plants, sculpted, free-flowing items, etc'"

Become a SketchUp Pro

If you want to learn more about SketchUp, the first place to head is **http://sketchup.google.com**. If you don't already have the program, you can easily download the free version here, and there's all the information you need to get started, although it's fairly self-explanatory. Once you're up and running, you can find out more about the app from the official site's blog (**http://sketchupdate.blogspot.com**), including its training information. If you then want to venture further afield, **http://sketchucation.com** has plenty of info, and **www.pushpullbar.com** is a more general architectural forum that has some keen SketchUp users. More of those keen users, as well as some great tutorials, can also be located at **www.sketchupartists.org**. If you're tutorial-mad, then more can be found at **www.googlesketchuptutorials.com**, **www.architectionary.com/SketchupTutorials** and **www.sketchuptuts.com**.

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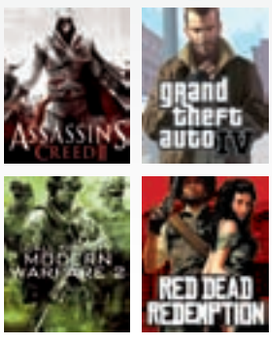

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Step by step
Easy-to-follow guides take you from concept to the final render

Artist info

Dmitriy Glazyrin

3DArtistonline
Username: Glazyrin

Personal portfolio site http://ujean-glazyrin.com
Country Russia
Software used 3ds Max 2009, Photoshop CS4
Expertise Dmitriy specialises in environments, 3D modelling, concepts and matte painting

Step by step: Texture and paint environments

Arctic Base 2010

A symbiosis of 2D and 3D to produce a CG wintry landscape which is both technically complex and atmospherically evocative

Dmitriy Glazyrin specialises in CG modelling and matte painting

This tutorial will be focusing on the process of creating an old arctic base from the very beginning: from concept through to modelling, texturing, composition and matte painting.

I'll show you how to use 2D elements to make the final scene more atmospheric and realistic. Additionally, throughout this walkthrough there will be an overview of 3ds Max and Photoshop in the production of this project, as well as several of the style techniques that I employed to develop *Arctic Base*.

There is a sample making-of movie file on this magazine's CD that shows a selection of short video step-by-step clips based on my workflow in Photoshop. A major part of the video concentrates on how to mould hard landscaping like rocks into the desired shape.

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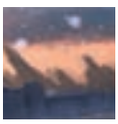
Texturing, Painting

On the Disc
'Making of' video

Software used in this piece

3ds Max Photoshop



Concepts

Inspiration behind the image

01 **I wanted to create** a fast motorcycle, which rushes through the icy wilderness. A powerful jet of snow from under the wheels shows the speed of this motorcycle. During the process, the emphasis changed to focus more on the base. While trying to establish a concept, I made a simple model of a motorcycle and pasted it into the photograph of a frozen landscape. I then started to paint objects, though it was all very sketchy at this stage.

02 **With an idea** for the final image, I made a simple rider for the bike as he was now a secondary character. The model was in need of a composition. I experimented with a variety of options as to what the base could look like. The best of these I rendered and finished with Photoshop.

03 **Next I thought** of a story for the arctic base. I had the idea it could be an abandoned ship and ran with this. For many years great ships sailed ice drifts, cast anchor and worked in the frozen land, so it's reasonable such a base might appear. Taking this inspiration as a basis for the ship, I made one compartment, which provided a guide for the rest.

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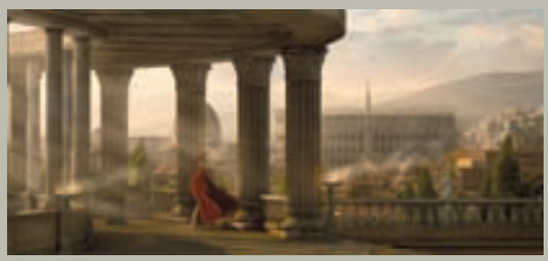
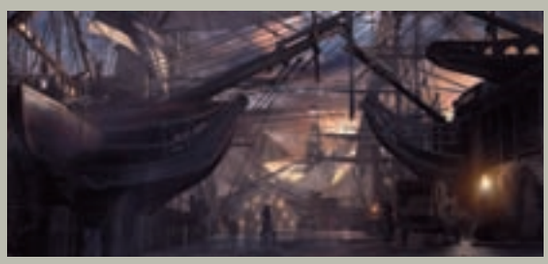
Artist Showcase

Dmitriy Glazyrin

I started as a matte painter two years ago. Looking to bring something new to my style, I became acquainted with 3D and realised that, combined with 2D, it could make my work more interesting. I would no longer be limited to photographic references; I was now able to create whole worlds. Currently I work in the advertising field, where it is necessary to create mainly contemporary corporate work, but environments remain a passion in my free time.



Praetorian **3ds Max, Photoshop, Poser, ZBrush (2009)**
This is a personal image in which I was trying to visualise one of my favourite themes – the atmosphere of ancient Rome. For the base forms and buildings I used 3ds Max. Textures partly were made in 3ds Max, partly in Photoshop, using some stock photos and custom brushes. The Praetorian guard was made using Poser and ZBrush, while postproduction of the final scene – colour correction etc – was completed with Photoshop.

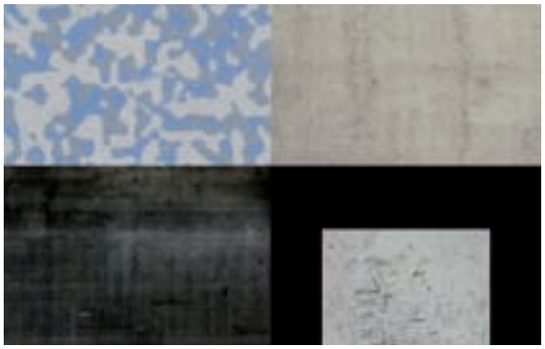


Tortuga **3ds Max 2009, Photoshop, Poser, V-Ray (2009)**
This image took a lot more time than I intended, but now it's finally done I can say it was great fun to do something piratey and to learn a lot of interesting details about that period. I wanted this piece to be complex in its composition and details, showing not just a single ship, but a busy port. Modelling was done in 3ds Max, rendering in V-Ray and postproduction in Photoshop.

Persia **Photoshop (2010)**
This image was made for a matte painting challenge for a Russian art society. The theme was 'Prince of Persia'. I used pictures of a settlement in Morocco as the main inspiration.

Modelling the textures

Giving the scene the right look



04 **For this work,** I pretty much painted wholly in Photoshop and textured mainly in 3ds Max. I used simple textures such as VRayDirt. V-Ray Render Elements utilised to enhance this piece were Specular, Reflections and Lighting, among others. I always try to include a lot of passes in my work for tight, realistic detail.

05 **Here is an example** of V-Ray Render Elements with processing in Photoshop for the final render. Remember that you can make your life easier by adjusting the highlights, shadows, reflections, etc, without wasting time on additional renders by taking advantage of built-in pass effects and layer adjustments.

06 **A very important thing** when creating environments with an aerial perspective is to set the right depth, in order to add realism and to divide the scene along the lines of front, middle and long-range. To create perspective, I use V-Ray's Z-Depth. In Photoshop, I invert the image, apply Screen blending and adjust Levels to obtain the desired result. I also play with the transparency of the layer to help with depth.

07 **I always spend** a lot of time carefully choosing the texture of the sky. A fellow modeller and friend of mine says, "The sky is the most important thing in a landscape", and I wholeheartedly agree with him. A sky will determine the overall atmosphere, where shadows will manifest and how light will be distributed. In other words, it sets the pace for almost everything. Never rush when it comes to the sky.

08 **Sometimes I render** the objects separately from one another and other times I do a scene in one pass; it all depends on the composition. For me, it's a lot easier to work with separate objects in Photoshop. It may take a little more time in the production stage, but if you want to make adjustments at the end, it is infinitely easier as you have complete control over each and every element. Also, you do not have to put the whole scene in jeopardy.

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Lighting and painting

Combining 3D and 2D elements

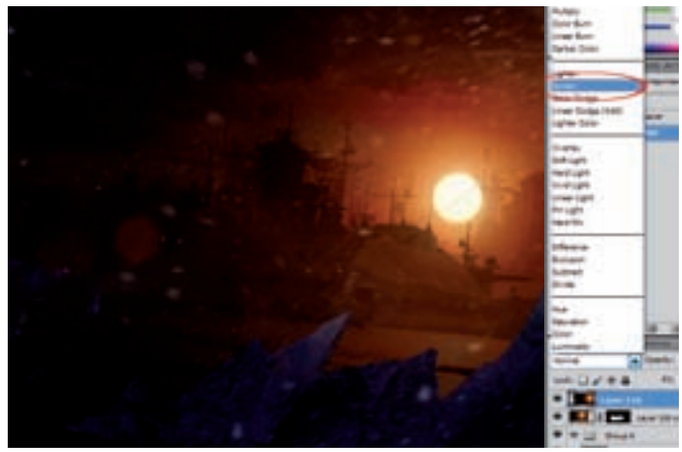
09 **First I cut elements** from photographs in Photoshop, from the ground up to the sky. These textures were used to render and provided the basis for the entire scene, so they were approached very carefully. I merged them to form my base matte painting; sometimes it can be very difficult to find all the perfect textures you require in one stock image.

11 **A clear demonstration** on the creation of rocks in the scene can be viewed in a short video on the disc. I drew natural rocky formations and imposed the texture of the ice over them. I painted in light, shadows and glare from the ice floe to get the realistic feel I needed.

10 **Next I added** the building, which was already rendered, applying elements such as Z-Depth, Lighting and Reflections, as mentioned earlier. I cloned the front rank bases, transformed them and added to the rear of the scene to bulk out the structure. I drew in some snow and highlights for the buildings too and placed these at the top of the layer stack.

15 hours render time
Resolution: 3,700 x 1,644

12 **After all of the objects** had been incorporated, I created a light source for the picture – namely the setting sun. I made this on a black background in Photoshop and used Screen blending mode. The sun is not just a white circle; its rays need to immerse and bounce off objects in the scene. I reduced the contrast and saturation of these objects. For most of my environment works, I tend to use VRaySun and few other light sources.



13 **In the final stages**, I drew snow in the air and behind the wheels of the bike, which boosted drama and movement. I then added some lights to the arctic base, but you could also include a flock of birds, more vehicles or other details to fill out your scene. Finally I performed some all-important colour correction and retouching, where I removed defects unintentionally created during production.

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I made this...

Incredible 3D artists take us behind their artwork

Artist info

Jiema

Website www.leewiart.com/space/393

Country China

Software used 3ds Max, Photoshop

Eclipse 2009

This is a very long story about a girl; you may have guessed the end of the story... it doesn't have a good outcome. I have grown accustomed not to be sad for too long if I lose something, as most things can be replaced in time.

Software used in this piece

3dsMax Photoshop

"My ex-girlfriend shot some photographs in the streets of Beijing, which was integral to this piece and I'm very grateful to her. I used these photos to build up this character and scene"

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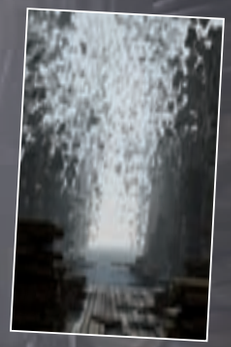
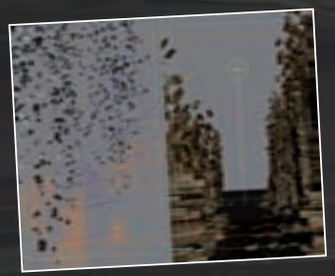
“This image was created in 3ds Max 2010. At the time I was travelling and could only carry a Dell laptop, so I couldn’t work with too many polygons: two books, a sheet of paper – nothing more”



“To achieve the final image I did a lot of drawing and made adjustments in Photoshop”



“I used the particle system and wind to make the books and paper as I wanted. I copied a lot of books and different textures to make them look more complex”

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Part two: Texturing Posing Rendering

Concept characters

Warrior 2010

"In this tutorial I am going to complete the concept warrior from a distant land, with realistically exaggerated forms and brutal weapons"

John Hayes is a videogame character artist

Often the best looking images are more than just rigid, ambient rendered models or grey ZBrush sculpts – they are fully surfaced, posed and rendered in their own environment that helps to suggest a mood or story. To help complete the savage warrior, started in the previous issue of **3D Artist**, we will need to create surfaces that look like worn metal, hard muscle and weathered bone. Then to bring him to life, we will give him an aggressive pose, in an unforgiving environment similar to warriors found in Frank Frazetta paintings.

Continuing with the models created in part one, I will use the hi-res model in both ZBrush and modo as a source to render and transfer highly detailed texture bases and masks to the lower-res modo model. The rendered maps will then be assembled and cleaned up in Photoshop and modo's 3D Paint, before being used to help create several Diffuse, Specular, and Surface Shader effect maps. Next the model will be roughly posed in Maya before lastly importing into modo for composition of the scene, shader setup and rendering the final image.

Software used in this piece

modo · Maya · ZBrush · Photoshop

Rendering maps

Creating maps from the hi-res model

A

01 Cavity maps in ZBrush

I begin by rendering out as many detail and effect maps as possible. Since the hi-res sculpt has the same UV set as the modo file, I save Cavity masks and PolyPaint maps for each part to help add more refined texture detail when re-creating them later in Photoshop. The UV Map Size is set to 8,192 and each SubTool is subdivided enough to smoothly capture detail, before creating images A.

02 Render AO maps in modo

I re-export the Level 1 geometry and use Decimation Master to export the hi-res geometry into modo. The hi-res and lo-res geometry parts are matched up into non-overlapping sets. The render resolution is set to 4,096 x 4,096 and Render Output set to Ambient Occlusion, with Occlusion Rays raised to 300. All lo-res geo is enclosed in a quad ball cage with a small ground plane with no UVs B.

B

A I used PolyPaint with Cavity masks and RGB set to 10 to evenly create a series of maps of the surface detail

B A shade sphere created by bevelling all the edges and deleting in-between faces

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behind the scenes

3D artists explain the techniques behind their amazing artwork

Artist info

John Hayes

3DArtist online

Username: John-Hayes

Personal portfolio site
http://john-hayes.cghub.com

Country USA

Software used
modo, Maya, ZBrush, Photoshop

Expertise John specialises in videogame characters

On the Disc

The final modo render scene. For further images, see below

Stock images used for reference and textures:

For the body skin texture: **http://senshistock.deviantart.com**

For anatomy reference photos: **http://mjranum-stock.deviantart.com**
http://vishstudio.deviantart.com

Environmental details: **www.luxology.com/asset**

Background images: **www.deviantart.com**

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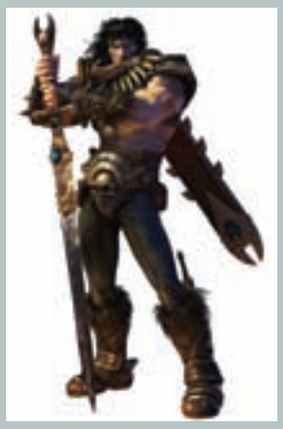
Artist showcase

John Hayes

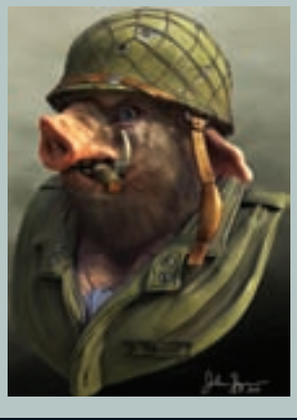
I am a videogame character artist working in PlayStation 3 and Xbox 360 development. My background includes working at Capcom, Sanzaru Games, SEGA and Factor 5, where I have created characters for *Iron Man, Golden Axe, Final Fight* and *Maximo,* among others. Working on console games is exciting as I always learn new techniques and skills.



Axe Battler
ZBrush, Maya, modo, XSI, Photoshop, Mudbox (2008)
Tarik the Axe Battler created for the SEGA videogame, *Golden Axe: Beast Rider* released on the Sony PlayStation 3 and Microsoft Xbox 360. The character was modelled in Maya, hi-res sculpt created in ZBrush, Normal maps created in Mudbox, Ambient Occlusion in XSI, textures edited in Photoshop and modo used for UV unwrapping, texture clean-up and rendering. The character is roughly 15,000 polygons with three 2,048 x 2,048 map sets

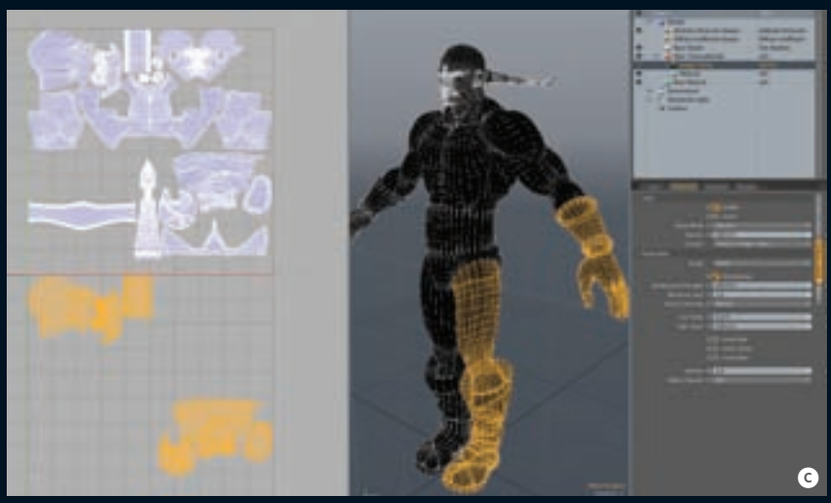
Ultimo Bust
modo, Photoshop (2010)
A close-up of a major boss in the *Iron Man 2* videogame. In game, the character is about 600 feet tall and is comparable to a full and animated level; basically Iron Man is about the same size as two of the eyes. This surface of the model is supposed to look massive, with many small structures, weapons and details

War Boar
ZBrush GoZ, modo (2010)
A 'Boar' 101st Airborne Soldier, created using ZBrush GoZ and modo 401. Since GoZ really speeds up my workflow, I decided to create only a test bust before I proceeded with a full character model. The base model and details with UVs were created in modo, and then exported to ZBrush for detailing. I then used GoZ to transfer mesh edits and updates between modo and ZBrush for the hi-res model



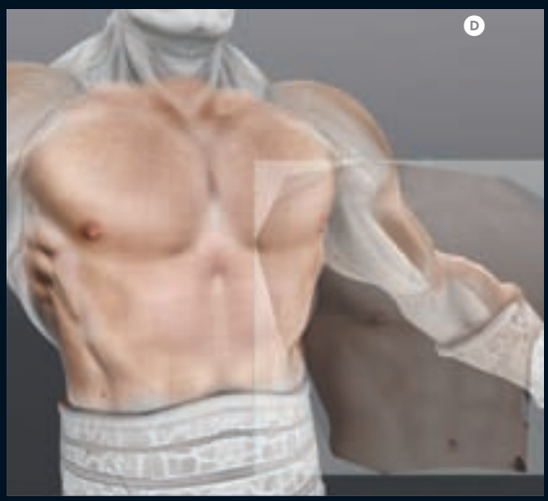
03 Render Normal maps in modo

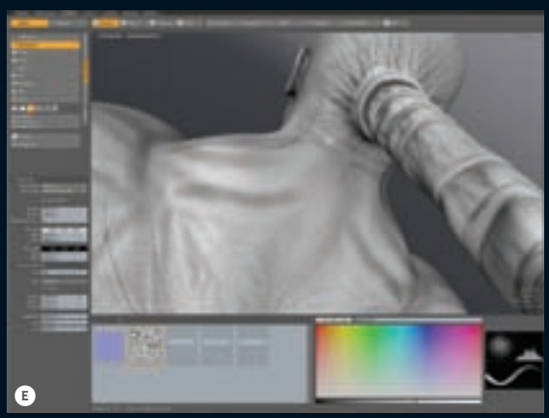
All lo-res geo has a TextureRender material applied with Smoothing Angle set to 180 as well as a 4,096 x 4,096 blank texture with Effect set to Normal. The hi-res geo also has its own shader set to 180 to get an even surface. Duplicate Normal maps are rendered out at different distances to help patch out errors caused by surfaces crashing into themselves C.



04 Projecting photos in modo

To help the skin look more convincing I use modo's Paint set to Image Ink to apply parts of high-resolution stock photos of models to create a colour skin texture. This will be used to add minor skin details and help add subtle skin colour variation to the final Diffuse, Subsurface and Specular maps D.





C I make sure that there are no overlapping UVs as they may cause Normal map rendering errors

D Check that Symmetry is set to X when projecting images onto the geometry

E Use modo's Paint with Clone Stamp or a brush set to Procedural to clean up

05 Map assembly and clean-up

All the rendered set maps for AO, Normal, ZBrush Cavity and Photo Color are assembled in Photoshop, and then the combined images for Color and Ambient Occlusion are re-imported back into modo for UV seam and rendering error clean-up. Any rendering errors in Normal maps are patched with new rendered maps, as clean-up on a 3D surface is not possible with Normal maps E.

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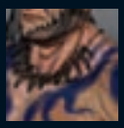
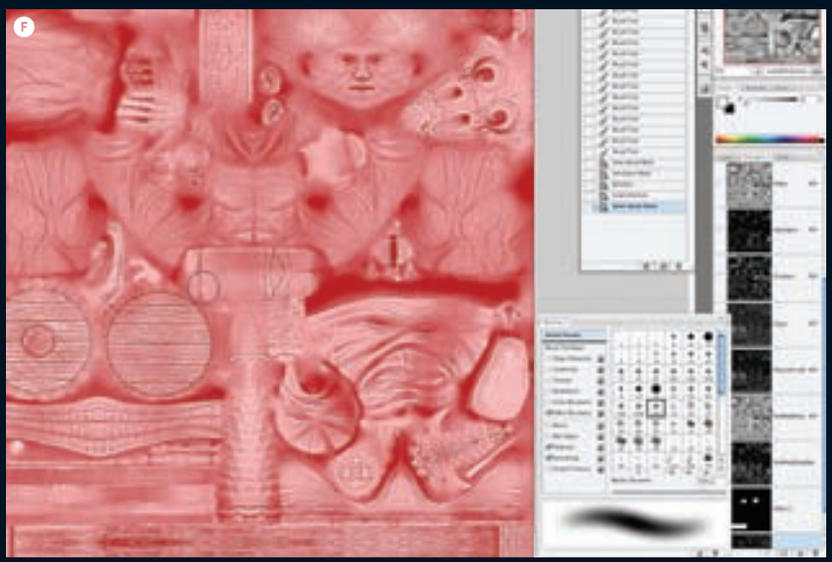


Texture creation

Making textures in Photoshop and modo

06 Detailing Ambient Occlusion

Using Photoshop, I combine the ZBrush PolyPaint and rendered Cavity maps as well as the desaturated Photo Color map to add more details to the rendered AO map. I also create Alpha channels with copies of the AO, adjusted lighter or darker to provide masks for additional detail. I will use the Photoshop Unsharp mask and High Pass filter to add more variations of Alpha channels to help emphasise detail areas F.



F I use Alpha maps as a mask to quickly add in highlights and shading to the Ambient Occlusion map

G Using modo's 3D Paint I add colour details such as war paint, fine detail decoration and scars/battle damage etc

H Skin and leather are low in contrast, while metal is lighter and has a very high contrast

I Black areas mask material effects, while white areas reveal them

07 Adding colour

The Ambient Occlusion is used with the Alpha map variations to add to flat base colours for the Diffuse map. Each flat colour is a new layer: tan for skin, dark grey for metal, brown for wood, and so on. Working dark to light, I load alpha selections to add shaded detail using separate layers for each pass, then import the flattened map into modo for further detail work G.

08 Creating specular

I use a copy of the un-flattened Diffuse map as the basis for the Specular map, with some shaded parts around the eyes, mouth, hands and underarms inverted to increase spec in those areas. The overall shading is adjusted for each material type; flesh is closer to 50% in Hue with low contrast, metal is lighter with high contrast, while wood and cloth are darker with high contrast H.

09 Making material masks

To apply different materials such as skin, metal, leather, wood and bone in modo, I quickly build black-and-white masks in Photoshop. Each mask will block out one type of material. I then import each into modo for edge clean-up and detailing I.

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Scene composition

Laying out the scene

10 Camera angle and pose

Frank Frazetta's painting *Death Dealer V* provided inspiration for mood and composition, with its lower view angle and stark backdrop. I start with simple polygon shapes as proxies to help position and pose a copy of the body mesh from Part one. I then use a low camera angle and the Deform/Flex tool to block out a pose that feels aggressive and dynamic J.

J A strong, dynamic pose helps to lend life and purpose to the character

K The props and camera angle are adjusted to best fit the pose and composition

L Creating ivy vines in An Ivy Generator on the imported pillar base

M Shapes in modo with several preset materials that help to quickly establish surfaces

N Area lights are just enough to illuminate the model

13 Set atmosphere

Using preset materials included with modo, I apply a Skin material to the body, Sandstone to the pillars and rocks, plus Wrought Steel to the weapons, then I turn to lighting. I switch off all lights, turn on Global Illumination, then import an HDRI image into the environment to serve as the primary light; it works particularly well with metallic reflections M.

Shader effects

The shader networks in modo work from bottom to top, much like layers in Photoshop. By using layer masks it is easy to combine different software shader effects on top of one another. When setting up shaders, I like to have a reasonably finalised version of the lighting as well as a simple light setup with only Ambient Occlusion and the default light set to Sunlight, to make sure the shaders look accurate.

11 Create flow

I use background props to help frame the character and add to the mood and atmosphere. Each of the elements is placed to help lead the eye to the main point of focus, as well as support the model's pose. All the elements are at angles to keep everything dynamic K.

12 Add the props

With the basic composition established, I start to replace the background proxy objects. The rocky base and columns have detail added with piles of rocks and clumps of grass. Lastly, I import and modify vines 'grown' in a freeware application called An Ivy Generator (see **http://graphics.uni-konstanz.de/~luft/ivy_generator/**) L.

14 Let there be light!

With the HDRI image set up, I add a few lights to add colour and pick out form. To add dark blue to the shadows, I insert a low-angle Directional light that casts no shadow, a blue Rim light at the back and an Area light to emphasise and fill in the top half of the body N.

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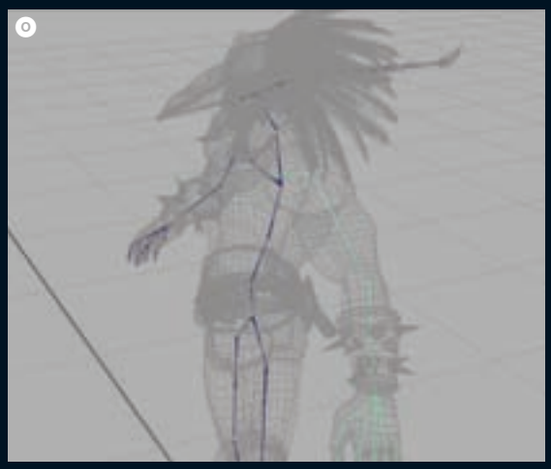
An aggressive pose

Posing the warrior

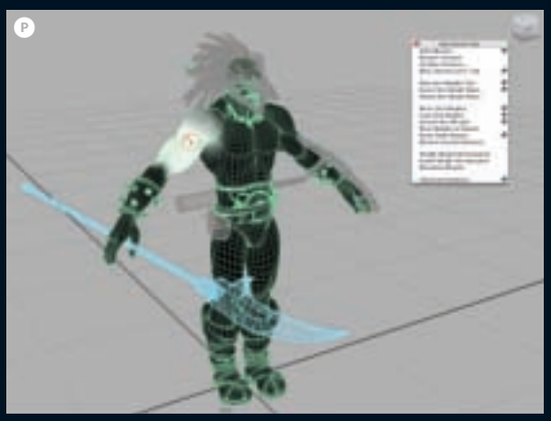
15 Joint setup

Bringing the warrior into Maya, I place the geo into its own layer and set it to Template. Next I quickly add the spine joint in the Orthographic side view up to the neck and head. I make joints for the legs and join them to the hip. In the Orthographic top view I create arms and join them at the shoulder scapula. The position of the joints should be close to the centre of the mass they're located in O.



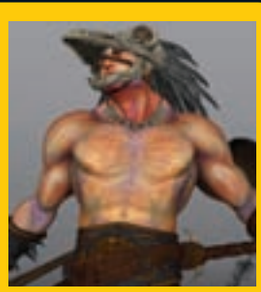
16 Skinning

I use Bind skin with Max influences set to 1 so I can easily find any vertexes that don't belong and fix appropriately. Next I use the Paint Skin Weights tools to quickly blend between joints, and adjust the weights slightly, testing the deformation by bending the joints P.



Top tip

Frank Frazetta's paintings have lots of action and colour. Action shots require a dynamic pose, and I find that when deforming or posing geometry in modo, it's helpful to use Morph maps to retain the original shape for additional editing or to try other poses. For a painterly look, all the textures use saturated colour rather then blacks and whites for tone and hue. For the skin, I used a saturated copy of the main Diffuse texture applied to Subsurface Color in the shader to bring out the skin's tans, blues, greens and reds.



17 Posing

With the base object imported in for reference, I start to pose the model, carefully checking from all angles, but mostly from the composition's low camera angle. With the pose complete, I detach the skin, and make sure Bake History is active, then export both the posed and unposed mesh of the warrior as OBJ files Q.

18 Morph setup

The unposed warrior mesh and the posed one are re-imported into modo. I place the posed version in a background layer and create a Morph map for the unposed mesh and use Vertex Map/Transfer to apply the deformation of the background mesh onto the morph of the active mesh. When posing, ensure the Morph map is active R.

O I make sure the arm and leg joints have a bend going into positive Z, then add IK

P Using the Paint Skin Weights tool to fix blending

Q Shifting the weight of the model to make it a bit more dramatic

R The vertex deform data is transferred to the active Morph map

S Using the Flex and Sculpt tools, I adjust the final pose and deformations

19 Tweaking

The posing in Maya was rough and joint bends could look better. With the Morph map active, I adjust the deformation at joints and hips. I will also slightly 'bulge out' muscle, position the weapons and add a bit of variation to the costume feathers for a ruffled look S.

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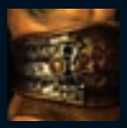
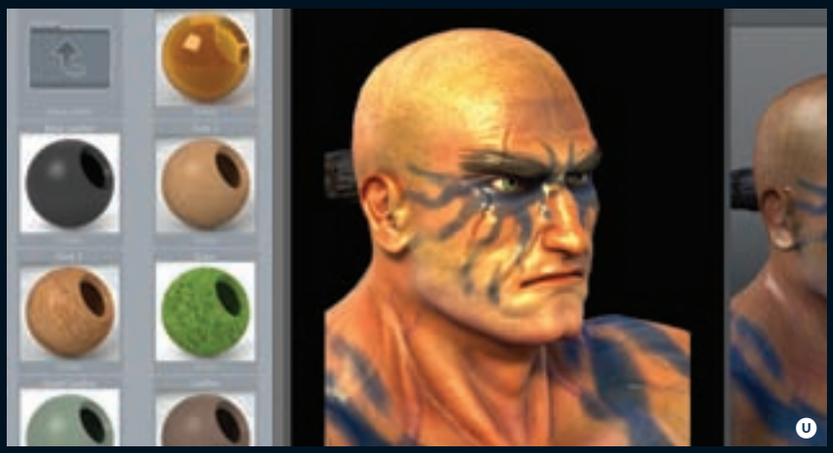


Creating the surfaces

Setting up advanced surface shaders

20 Add textures

I begin by adding modo's preset materials to the character and separate each of them with a material group mask. I layer the shaders in order of inside to outside, major to minor. In order: Skin is first, followed by Leather, Metal, Gold, Wood and Bone. I turn off the visibility of any shader effects for each material and make sure they are all set to 180 degrees Smoothing (T).

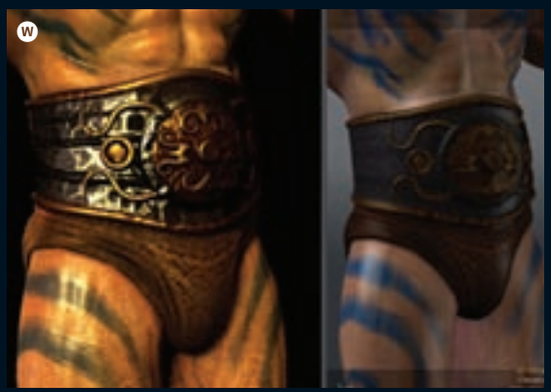


21 The Skin shader

The skin surface is made up of the modo Skin shader preset with Diffuse, Specular, Normal, Subsurface Color and Subsurface Amount textures. When applied, I adjust the high and low values and opacity of each layer if needed to get the rugged and colourful Frazetta look I am aiming for. Finally to add a bit more shading, an Ambient Occlusion map is put in the top layer at 50% Opacity with blending mode set to Multiply (U).

22 Leather

Leather is similar to the skin with a more matt finish to the surface and without Subsurface Scattering. To help emphasise a worn-out look I add the maps for Ambient Occlusion set to Roughness, and Diffuse set to Specular Color and adjust their values to get twice as much contrast. Finally I use a ramp set to Incident angle to get the slight 'peach-fuzz' look to the edges (V).

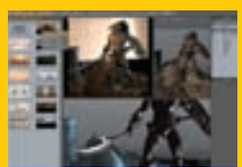


23 Worn metal

I wanted the metal to look very worn, similar to an old copper coin. Using the modo preset for Cast Steel as a base, I add the Diffuse, Specular and Normal maps and use them to drive other effects as well. The Specular map is also used for Roughness and Reflection amount with the high and low values to create a high, almost black-and-white contrast. The Diffuse map is used to control Specular Color (W).

Use HDRI for lighting

A good way to get convincing lighting is to illuminate the model with an HDRI image, with Global Illumination active. After a few adjustments, the result will provide an even, well-lit model. For this scene I wanted to add more colour and drama, so the HDRI image needed to have a black base where I introduced lights to add coloured shadows.



24 Wood and bone textures

The bone and wood needed to look aged. The bone has some Subsurface Scattering with the effect being much more desaturated than the skin, making it somewhat grey. The wood is not very glossy and has a more solid diffuse colour, as it needs to look hard and jagged (X).

(T) The group mask image is placed at the top of each group

(U) A layer mask is applied to the base shader to mask out Subsurface Scattering for the hair and body paint

(V) Creating an Incident angle ramp to add a slight fuzzy look to the leather edges

(W) Gold/Bronze metal is added over the top of the base metal for more variation

(X) Using the Diffuse settings to control Subsurface Scattering colour

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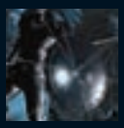


Finishing touches

Adjusting the light and rendering

25 Quick adjustments

It's now time to make final adjustments to the lights. At this stage, to speed up the renders, I hide everything except the main areas of focus such as the head, weapons and arms. I also use the proxy geometry for background elements to help speed up the renders in the Preview window Y.

Y Toggling the shaders on and off really helps to speed up lighting adjustments

Z A Directional light is used to add more depth to the rocks and pillars

AA The camera depth is matched up with the Depth output settings

BB The final render before adjustments and colour balance

CC Finally some minor light glow and rim light effects are added

26 Tweaking light and shade

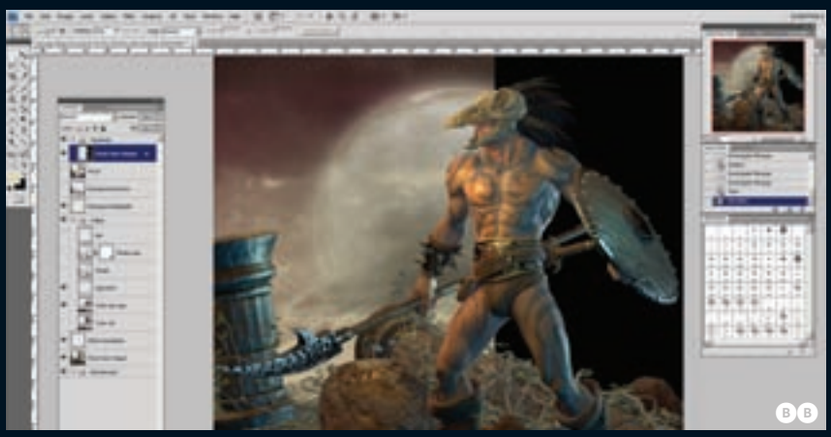
A couple of additional Directional lights are added to illuminate the silhouette of the character and some parts of the background. I also add a couple of small Point lights to fill in areas of shadow. With the final lighting in place I do another quick pass on the shaders for any elements that are not working well with the light. I also change the contrast of the surface shading by adjusting the opacity of the top layer AO maps and setting to Multiply Z.

Highly detailed AO and masks

When creating the warrior, it was important to start simple and make sure each stage was well thought out and carefully built. The model started as a box, and a good silhouette shape was formed and posed. The scene composition was roughed out with primitive proxy shapes before adding rocks, leaves and other details. The lighting started from one source and was tweaked before any surfaces were made. A good silhouette, clean textures and the use of various surface materials helped to bring this magnificent warrior inspired by Frank Frazetta's work to life.

27 Render settings

I change the default render setting to 0.1 for Refinement Shading Rate and 1% for Refinement Threshold. I check lights have a Spread angle of 10%, leaving Depth Blur and Bloom to post. To help in Photoshop, I include outputs for Final Color, Alpha, Diffuse Coefficient, AO and Depth AA.



28 Clean-up and colour balance

I import all the rendered output into one PSD file. The first thing to do is clean up any rough rendering artefacts or edges. Next all images are separated from the black background and images of a stormy backdrop and a moon from deviantART are added. I then adjust the colour balance and hues to bring the foreground and background elements together BB.

29 Post-processing and balance

I use the various other render outputs as either overlays or Alpha masks to adjust the lighting and surface detail. I also tweak light and colour saturation to help emphasise the focal points. I overlay the Diffuse Coefficient pass to balance and fix blown-out colour, while AO and Depth are used for shading tweaks and to bring out outline details CC.

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I made this...

Incredible 3D artists take us behind their artwork

Artist info

Marek Denko
3DArtistonline

Website www.marekdenko.net
Country Slovakia
Software used 3ds Max, V-Ray, ZBrush, Photoshop

> Make small and unique objects and details to add interest to your artwork

Everything Beautiful is Far Away 2010

I spent quite a long time creating this image – not that it was too complicated, but there were periods of time when I really couldn't touch it for several weeks at a go. Some guys thought that I was dead, because I wasn't posting any new work!

This image is about being far away from family, friends – from everything you love and care about. Just a cold, anonymous waiting area of some airport gates with strangers all around, set to the mood of cold weather with a soft, foggy sunset to emphasise the atmosphere. I know these days airports are quite modern and fancy, but in some ways that makes them even more impersonal, with all those duty-free shops and fake Irish pubs and pizza restaurants with fake smiles. So please take a minute, reflect and enjoy...

> The more love you give to your textures, the better the results. There are three different UV channels on the floor to control the reflection and glossiness values

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> Use the built-in 3D depth of field of your renderer to achieve nice, correctly blurred edges of the distant objects in contrast to a very bright background

> Render a beauty pass along with other render elements, like reflections, to enhance your output

> Using fog directly in your render will make it look better. Fog will appear in reflections and refraction too

Software used in this piece

3ds Max · V-Ray · ZBrush · Photoshop

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Step by step: Create photoreal facial features

Kléber Dárcio Lourenço Silva 2010

> Master the techniques to create a lifelike portrait packed with emotion and realistic facial features

Kléber Dárcio Lourenço Silva is a 3D generalist

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Step by step

Easy-to-follow guides take you from concept to the final render

Artist info

Kléber Dárcio Lourenço Silva

3DArtistonline.com
Username: Kleber

Personal portfolio site
www.kleber3d.com

Country Brazil

Hardware used
Intel Core i7-860 (2,80 GHz)
8GB DDR3

Expertise Kléber's diverse skills lie in modelling, texturing, concepts, art direction, rendering and compositing, atmospheres and lighting

Software used in this piece

3ds Max | Photoshop | BodyPaint | ZBrush | V-Ray

The major aim with this digital portrait was to obtain a high degree of photorealism, not just in the facial features and skin texture, etc, but in the very expression of surprise on the model's face. With this end in mind, the character was modelled with a considered combination of 3ds Max and ZBrush.

The basic hair was created using the Hair and Fur tool in 3ds Max and then refined with lighting and paint effects, while a range of shaders, including VRayFastSSS2, were utilised to capture lifelike skin and eyes.

My main advice is to use lots of real-life reference as you work and not to overdo any effects; keep things subtle and well balanced.

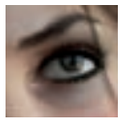
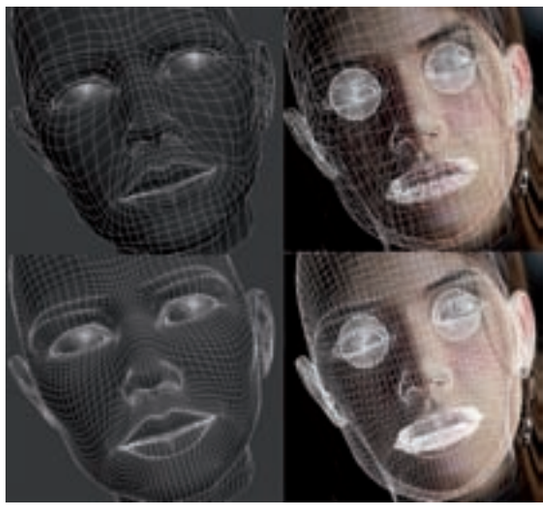


Image concepts

Sourcing the ideas

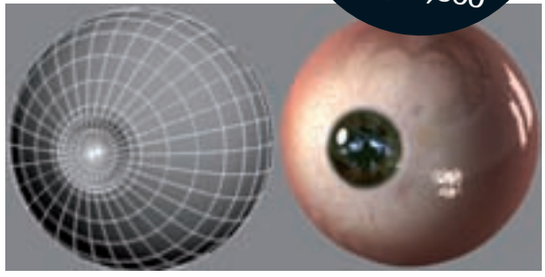
01 The expression of the character is the starting point for this creation. All the emotion of the scene needs to emanate from the expressions and details of the eyes, face, mouth, etc. The plan is also to keep features realistic and delicate. In addition to the features, the scene needs natural lighting and to give the impression that the person is being photographed spontaneously.



02 The character is developed over a base mesh. Bumps and settings and strains are made within 3ds Max and ZBrush. A 'morpher' with various shapes and expressions of phonemes (speech sounds) is used to create the natural, off-guard expression of the character.

1 hour 15 mins render time
Resolution: 2,784 x 1,800

03 Three meshes are used for the eyes: one for the cornea, one for the pupil, and another to wrap around the eye to give it the sensation of moisture. The eyes are made dark to remain in keeping with the mood as well as the colouring of the character. To help with the realism, the eye shader has a translucent skin.



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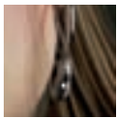
Artist Showcase

Kléber Dárcio Lourenço Silva

I work as a coordinator and 3D generalist in production in Brazil and do some work as a freelancer. It is the little details that go unnoticed by everyday life, details that the eye cannot always see: nature, people, animals and so on, that most inspire me as an artist. I'm also inspired by the work of various studios like Pixar, DreamWorks, Blue Sky and other artists.

Little Girl
3ds Max, BodyPaint, Photoshop, V-Ray (2010)
Frame animation for a Health Ministry campaign against infantile paralysis. This is a character already well known in Brazil. All animation was inspired by the Pixar *Toy Story* series, as it needed to target children under five years old. The image was developed for the Brazilian producer Nitroglicerina (**www.nitroglicerina.tv**).

Big Boy
3ds Max, BodyPaint, Photoshop, ZBrush, V-Ray (2010)
Picture made for a short film of a big boy and girl. The animation takes place in a neighbourhood where several disasters happen on a street where a pretty girl passes. All lighting was done in V-Ray, using VRaySun, modelling in 3ds Max and ZBrush and textures were refined in Photoshop and BodyPaint.



Create the textures

Give the character the right feel

04 **Photoshop and** BodyPaint are used to paint the skin texture. Photoshop is handy for heavy work and laying down the base textures, while BodyPaint is used to refine the Photoshop work and is applied to the model details. Working in this way can be useful as you see the detail in an abstract, clinical way, and can spot any imperfections that could be missed if it was applied directly to the model from the start.

05 **It's tempting to** try and go for a perfect complexion, but the point of this image is to keep the realism as authentic as possible. This means that the skin needs to have small blemishes and imperfections. The trick though is to keep things in moderation. Although the aim is realism, it's also important to keep any lines or blemishes subtle so as not to detract from the delicate feel of the image.

06 **The hair is created** using a combination of flat and textured hair and fur in 3ds Max. The intention behind using the standard Hair and Fur tool is to create a basic outline as opposed to the completed hair. An Alpha channel is used to allow for transparency of tips, while edges are selected and tweaked to create a less uniform hair shape.

07 **To create a darker** scene, V-Ray is used to render. The settings are as follows: in Image sampler, Adaptive DMC subdivision is selected to soften the image. For the IM, it's important to consider the reflection of light striking on surfaces, being part absorbed and part reflected by the various objects, eg skin, hair, jewellery. In the Indirect illumination panel, set the ambient light and colours. This sub-menu is one of the most important. It contains the configuration parameters of the scene and how the lights will behave via the Global illumination. The On control is checked to activate the settings. Primary bounces is the intensity of the light rays, while Secondary bounces determines the strength of secondary diffuse reflections in the scene.

08 **Make-up** is an ideal element to add as it helps with the realism and generally enhances the character's beauty. A shadow is added to the eye region, which helps concentrate the main focus of the expression. A touch of red highlight on the cheeks helps create the impression of a healthy tone, but be careful not to go too far with any make-up; keep it sophisticated and natural.

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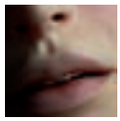
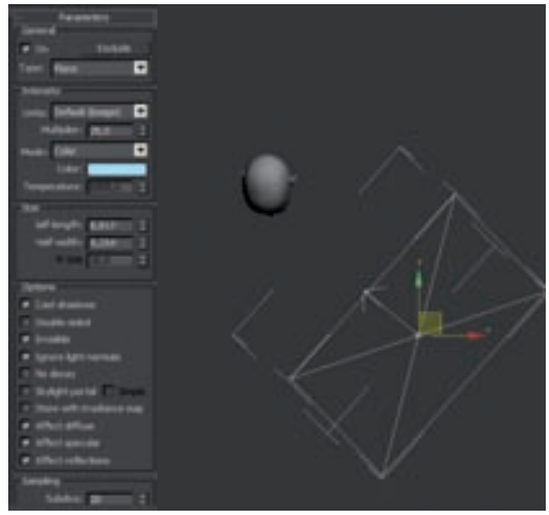


Apply materials and lighting

Take the model from real to photoreal

09 **Lighting is crucial** for complementing the expression and also to emphasise the skin tone. Colour and light are powerful tools that help define the entire scene and establish the composition, camera angles and character. Everything we see depends on successful lighting and colour so make sure you spend plenty of time experimenting with these elements.

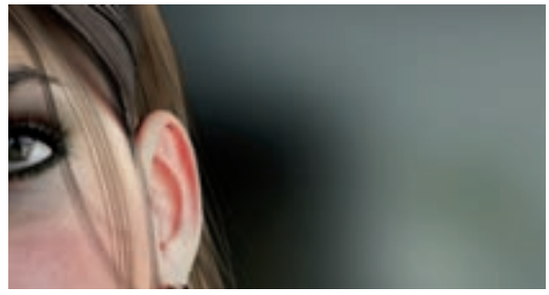


10 **The lighting of** the scene is done very simply, using just one Plane light and an Omni light for the hair. The positioning of the light helps guide the direction of the eyes, and is placed ahead of the character. A blue tone is introduced to make the scene feel cooler. Shadows are always something to consider carefully, as they can greatly compromise the quality of an image; don't forget to set Shadow subdivision in the lights.

11 **The materials paint** your scene with colour, brightness, transparency, translucency and generally give objects their finishing touch. They also control how the objects reflect and transmit light. To create a basic material, we define the following parameters: Color, Specular and Environment. The Material Editor gives access to places where you can insert maps to characterise the same areas. The shader used is VRayFastSSS2, which is great for creating skins. For the composition of the material, some maps are made to add parameters for the dermis, subcutis and epidermis. Each separate map has its own function that, once combined together, results in a convincing skin shader.

Modelling the hair

The greatest difficulty when it came to modelling this image was producing the naturalistic hair. After creating the main outline with 3ds Max's Hair and Fur, textures were painted in Photoshop, but still warranted an extra touch-up in BodyPaint for refinement. Next was the lighting. This was done in part with a Plane light for the full scene, but I also added an Omni light to specifically illuminate the hair in order to enhance tones and bring out the photoreal detail.



12 **The background** of the scene is kept quite simple. Tones are chosen to match the scene, with blurred detail to help ensure that the character is the central point of focus.

13 **Z-Depth and Ambient Occlusion** This was the stage that I really defined the character, using z-Depth deep shadows and occlusion to bring out the detail. I rendered the character and the environment separately and then used a colour map to make the two images sit together.

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I made this...

Incredible 3D artists take us behind their artwork

Artist info

Jacek Irzykowski

Website www.jacekirzykowski.com
Country Poland
Software used 3ds Max 2011, V-Ray 1.5, Photoshop CS4

Cyber Fly

2010

This was for a competition organised by Panasonic with the theme 'Ideas for life'. My concept is a bridge that lets you teleport yourself to another place within the city or the country. The whole procedure is serviced by Panasonic providing a hologram system to assist with the UI.

"I tried to choose an interesting angle that would allow for a good stereo 3D effect, but also convey the narrative aspects of the image. If you have 3D glasses, you can see the stereo anaglyph at my Flickr page: www.flickr.com/photos/43091652@N03"

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Software used in this piece

3ds Max · V-Ray · Photoshop

"The basic setup was done in 3ds Max 2011. I needed the background to be dark so the cyber tunnel would be clearly visible. My initial idea was to have the lighting depict a sunset, but this didn't work so I changed it to dusk"

"The final rendering was done using a V-Ray plug-in and post-work in Photoshop. I used one main light for the sun (a standard Target Direct light), around six Omni lights (street and buildings) and an HDRI map to illuminate the environment as V-Ray Skylight GI"

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> This image was made as a personal project using models I had been making for work

Stefan Morrell is a content creator and illustrator

Software used in this piece

3ds Max · ZBrush 3.5 · RayFire · finalRender SE · xNormal · Photoshop CS4

Model environments

City Ruins 2010

behind the scenes

3D artists explain the techniques behind their amazing artwork

Artist info

Stefan Morrell

3DArtistonline
Username: stefan-morrell

Personal portfolio site http://stefan-morrell.cgsociety.org

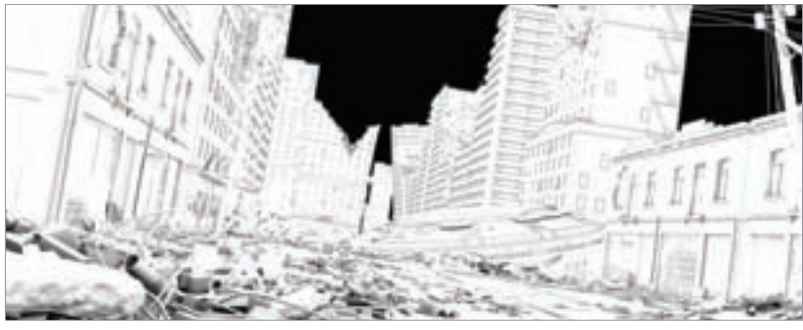
Country New Zealand

Software used 3ds Max 2009, ZBrush 3.5, RayFire, finalRender SE, xNormal, Photoshop CS4

Expertise Stefan specialises in environment design, creation and rendering

This image was a chance to use a few models that I'd been creating for my DAZ 3D storefront where I sell commercial 3D content. I used 3ds Max for all modelling and UV mapping, and also used a 3ds Max plug-in written by Mir Vadim called RayFire; finalRender was used for rendering and Photoshop for postproduction.

The image only uses three buildings and a UFO model; these were instanced throughout the scene to build up the environment, proving that dozens of buildings are not required to create a cityscape. The image came together very quickly due to the models already being made for other projects; it was a nice deviation from working on a commercial models as I often don't get the chance to use my own models in my artwork – sometimes it's been years between creating the models and using them in my own imagery. It's handy having so many models that I can call upon at any time; always recycle your work!



Concept

I wanted a scene that was easy to read so the concept was kept basic: it's a very formal composition using a slight camera tilt to work with the crashed UFO. I made no concept sketches, but played in 3ds Max to find interesting shapes and angles that were visually pleasing.

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Modelling, Texturing, Lighting

A Here we can see the composition of the 3D scene without textures

01 Composition

I've always preferred compositions that are easy on the eye and where the viewer can quickly read what is going on, often using the 'golden ratio' or divine proportion to help flesh out an image. My initial plan was a street of ruined buildings with a thick, oppressive atmosphere; the UFO being more of an afterthought when I realised the scene needed a focal point. I originally played with the idea of a boy looking down the street in the foreground, but I thought the UFO added a kind of lonely atmosphere that worked well A.

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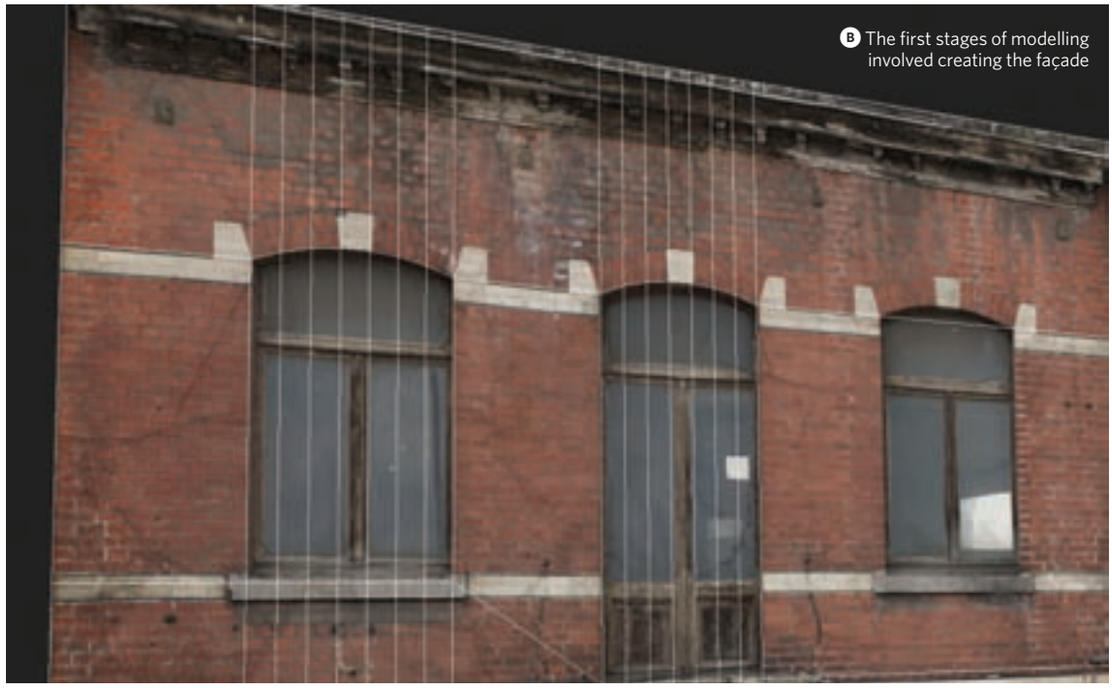
Problems and solutions

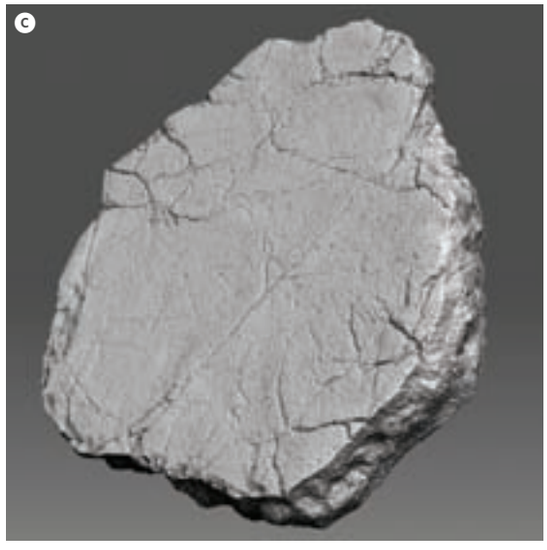
Having made many buildings over the years, I've come up with a workflow that's both efficient and quick. Initially I use a simple plane and apply a texture to it, and then cut around the texture and extrude, inset, etc, to add extra detailing. This is a unique workflow in that my textures and modelling occur at the same time – most other people model first, then UV map and then texture. For my own work, I find doing everything at once is both faster and I can achieve more; it may require some additional UV mapping to tweak extrusions as you model, but overall it's a very fast method for creating a building based on a photo. The major issue I faced in creating these ruins was keeping the poly count down while still allowing for plenty of visual detail. Once everything was done I spent a long night deleting polygon faces that the camera would never see. If the model was only for my own use, I wouldn't have bothered with that step, but given these were intended to be commercially available I had to think of people using them on lower spec systems.

Start the modelling

Build from photo references



B The first stages of modelling involved creating the façade

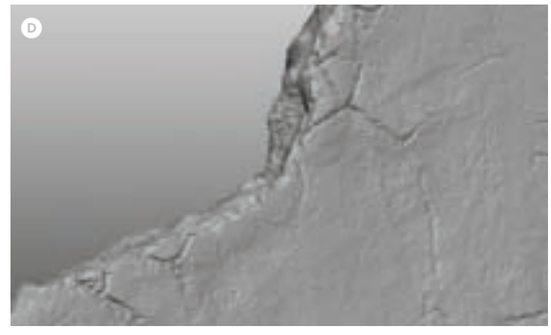


C This is one of the hi-res sculpts, as seen in ZBrush

02 Cutting based on texture

Starting from a good photo texture reference, I created a plane in 3ds Max and cut out the major shapes of the applied texture map. At this early stage a simple Planar UV map is the best way to start. Use the Preserve UVs option in Max to avoid destroying the UVs as you move edges and vertices around the model.

Once the major cuts were in place around windows, doors and other major shapes, I then extruded windows etc to get a 3D shape. All these extrusions required new UV mapping, as the Preserve UVs feature doesn't work on extrusions B.



D A close-up of a destroyed concrete wall

03 High-poly ZBrush modelling – 1

To go alongside the regular low-poly assets, I also created several high-poly ZBrush sculpts of concrete debris. From these I generated a series of Displacement maps to be used on the final low-poly model.

After laying out a good set of UVs, I sent the UV template to Photoshop and used photo references to get cracks and fractures in the right places. This image was then used as a Displacement or Alpha mask in ZBrush, and then another layer of sculpted detail was added on a new ZBrush layer using the original image as a guide. The final Displacement map also served as a great starting point for applying the coloured textures C.

04 High-poly ZBrush modelling – 2

For other high-poly assets such as this destroyed wall, I used brushes like HPolish (for chipped edging) and Mallet Fast (with very low strength settings). I enhanced the cracks using the Standard brush and, as with the previous step, I used Alpha maps of concrete cracks to ensure everything looked reasonably realistic. The model was subdivided to around six million polygons, with displacement generated in xNormal (www.xnormal.net) D.

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E

Lighting and rendering

Global Illumination by way of Physical Sky controls is my most used method for outdoor lighting. It's a very forgiving lighting type and perfect for outdoor scenarios. I also added a Direct light that throws a good deal of finalRender volumetric lighting into the scene. The Direct light was also used as it helped me see where shadows would fall.

I paid special attention to sun placement so that the light cast shadows in an interesting way. finalRender also has a great feature called Detail Detection; with this option you can pick out all the small details via an Ambient Occlusion pass. I usually overdo this part because I like the effect so much. In postproduction, I toned it back and masked out some areas of occlusion; I also used the Z-Depth renders to ensure the AO was only present in foreground elements – in this image that meant a subtle gradient mask from the foreground to the background.

The same Direct light was used as a Sun light in the Physical Sky palette options. I'll often use a compass helper to aid in positioning the lighting, but for this one it was enough to rely only on the single Direct light. This simple light setup made for a fairly quick rendering too.

4 hours render time
Resolution: 6,000 x 2,396

E The three final buildings (the first two are now available at www.daz3d.com)

F Here we see the model broken into its three main modular components

G The UFO rendered with a finalRender Dirt shader

05 Buildings

Only three buildings were used in the entire image; I used instancing to duplicate them around the scene. Instancing is a great technique that I use all the time in rendering as it has such a low memory footprint. The road sections each building sits on were kept modular so I could fit them together in various configurations, and the final building was given the least amount of detail as it was only going to be seen in the distance E.

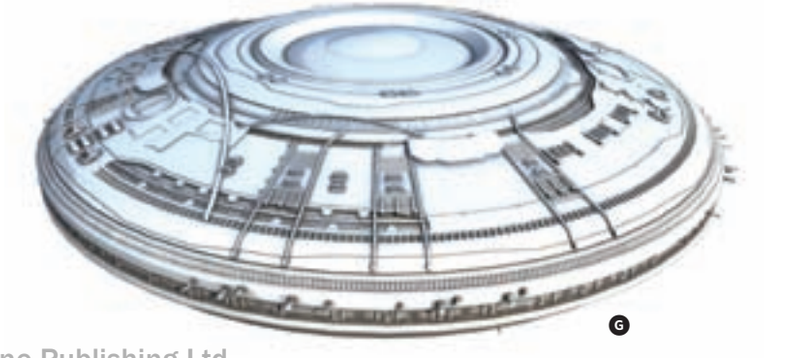
06 Think modular

Keeping things modular is a good idea as you can then create variations on the same theme by using one hero model. With the hotel building for example, I have four main sections; for many renderings I may only want to render the bottom section so any extra geometry in the scene is a waste of resources. With a modular approach to modelling, I can just delete parts of the model that aren't seen F.

07 UFO

Adding a crashed spacecraft gave the image some focus; this is a model that I quickly made in a few hours. The UV map was projected from the camera view to save time, and I applied only one texture map. It was only ever to be seen in the distance so I didn't want to waste too much time on it. During postproduction I added small blue lights to give it a bit more punch, and during rendering, I focused on getting very strong highlights so the viewer would see it as a focal point G.

F



G

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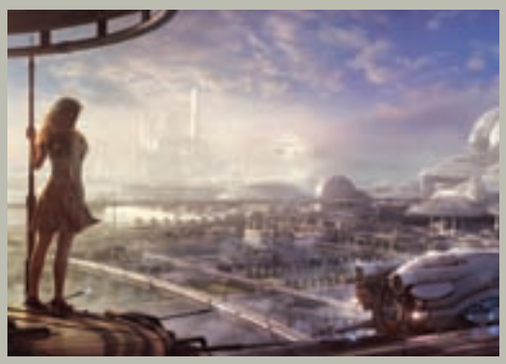
Artist Showcase

Stefan Morrell

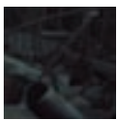
I design and build environment and prop models for DAZ 3D, where I've been the top-selling artist for several years. I also work as a freelance illustrator; recent clients include *National Geographic* magazine, where I was tasked with producing several pages of space-themed images.



Shuttle 43 **3ds Max, finalRender, Photoshop (2010)**
Just another chance to create a magical environment. The character is a great way of framing an image and leading the viewer's eye back into frame

Flight to the Blue Tower **3ds Max, finalRender, Photoshop (2010)**
A still from an animation that I've been working on featuring a flight through a sci-fi cityscape

The Neighbourhood **3ds Max, finalRender, Photoshop (2007)**
Urban environments are always fun to work on and allow plenty of room for unique detailing. With this image I received a Master award in Ballistic Publishing's *ELEMENTAL* book

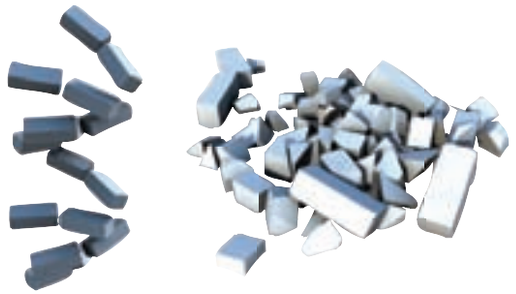


Let's break some stuff

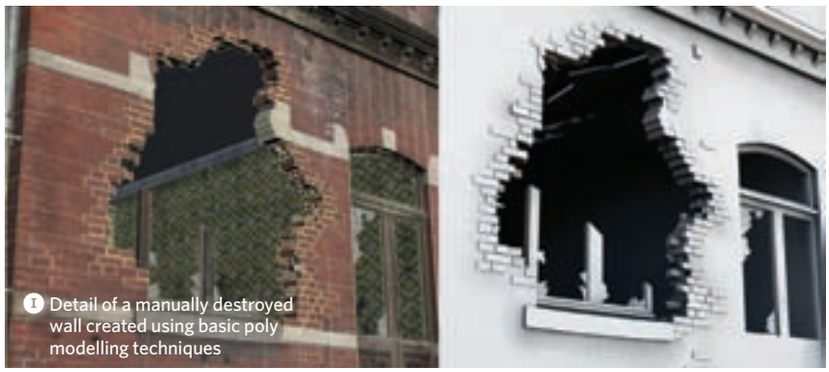
Now we come to the destruction

08 RayFire

To make these buildings ruined I used a lot of manual modelling and a plug-in called RayFire (www.mirvadim.com), widely used in the entertainment industry, from game cinematics to movies such as *2012* – it's the go-to tool for destroying and generally wreaking havoc on your models! I usually fracture the models first and then use RayFire's PhysX connection to do the simulating; I also make use of additional demolition options that allow the models to break on impact. For this model I tried to keep things very low-poly, but with RayFire you can achieve some very detailed destruction H.



H A before and after of a group of bricks randomly placed, and then as they appear after RayFire simulation



I Detail of a manually destroyed wall created using basic poly modelling techniques

09 Manual destruction

Along with RayFire, I manually added some destruction; this takes a lot of time, but the payoff is some very specific destruction and optimised geometry. I used basic poly modelling techniques in 3ds Max; because these were to be commercial models, keeping everything optimised was paramount. I first cut out a basic shape from the textured building façade and then duplicated a single brick around the broken opening (stopping occasionally only to move UVs around to avoid repeating textures). When placing these bricks I followed the applied texture map so the manually placed bricks lined up correctly. I also added many broken bricks that had been fractured in RayFire I.

Textures

For the most part I use my own photo-sourced textures that are tweaked in Photoshop; working from real-world photos is essential when doing realistic urban environments. In addition to this, I used a façade texture from **www.cgtextures.com** which is a fantastic online resource for CG artists.

10 Rubble piles

The biggest thing that will help sell a destroyed environment is bucketloads of detail. Adding lots of rubble piles and other debris is essential. The focus with these is creating a good silhouette. My images usually have a good amount of atmosphere so I know the piles will read better as they recede into the distance as long as the shape is interesting.

Add pipes, steel reinforcing, chunks of concrete and brick – whatever you can – to sell the destruction, as these will also be seen close up. I use displacement for added detail J.

J This image shows one of the final rubble piles

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Texturing the ruins

Add a desaturated look to the buildings

K This is one of the façade textures; a variation of this map with burn damage was used for the upper floors

11 Building façades

I tried to keep this texture as simple as possible and so the windows are just box shaped with a simple trim at the base of the map. This fitted in well with the theme and overall design of the building.

Adding the concrete trim around the windows was an effective way to avoid matching up the brick pattern as it appeared in the inset part of the windows K.

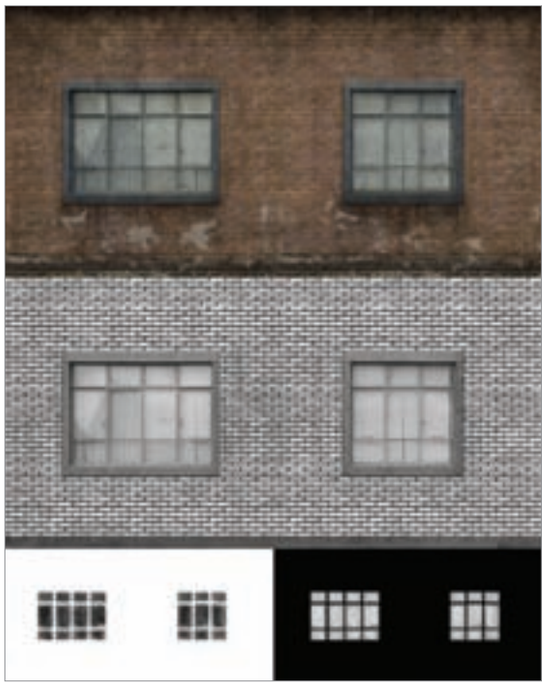
M Image shows a close-up of the textured UFO; note the simple one-colour theme, letting the geometry carry the detail

13 Texturing the UFO

In keeping with the 'keep it simple' mindset, the UFO was the simplest of all. The UVs were projected from the camera view and textured using a generic concrete image. All the glowing blue lights were added in postprocessing to avoid extra render time and also to allow for more flexibility when deciding if I even wanted the lights M.

14 Decals

I often use decals to help break up repetition in textures. In the ruins, these are single polys representing bullet holes. I randomly distributed these across the model, initially using the Scatter option, but then using manual placement with some rotation etc. Even though they all used the same texture, they added a nice sense of randomness to the building and also helped to sell the idea of a war-torn, battle-damaged city N.



L This image shows the Color map, Bump map, Opacity mask and Reflection mask

12 Matching textures

To go with the previous texture, I also used a tiling texture. This appeared at ground level and, as such, needed a bit more texel density to hold up in close-up shots. I used Photoshop Curves adjustments to match the tiling brick pattern to the original façade. It's a good idea to have a collection of brick patterns saved in Photoshop that can easily be called upon. For every brick texture I've saved as a Photoshop pattern, I also create a Bump map. This again saves time when creating the final texture as the finished Bump map is just a Flood Fill away L.

N Screenshot from 3ds Max showing decals applied to the building

Rendering the image

Rendering was fairly straightforward. I tend to render out several elements (passes) so I have a lot of room to move in postproduction. Z-Depth is an essential ingredient in cityscapes and I use this to create atmospheric perspective, depth of field and also to paint in smoke behind buildings.

I rendered the image at 6,000 polys on a Windows 7, 64-bit, i7 Quad core with 12GB RAM.

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I made this...

Incredible 3D artists take us behind their artwork

Artist info

Coretta Singer

Website
www.correttasinger.webs.com
Country USA
Software used Maya, Photoshop

V5: Blue PlanetRider

2010

The bike was created as an entry for the 'Accelerate: Future Transport in the style of Syd Mead' competition put on by CGSociety. I chose a chopper because it's a vehicle with an individual and unique aesthetic.

Software used in this piece

Maya

Photoshop

"Originally there were two people in the picture – both to be 3D models – but time was of the essence and I also wanted to keep the image clean and free of clutter, so I just painted in the female rider in Photoshop"

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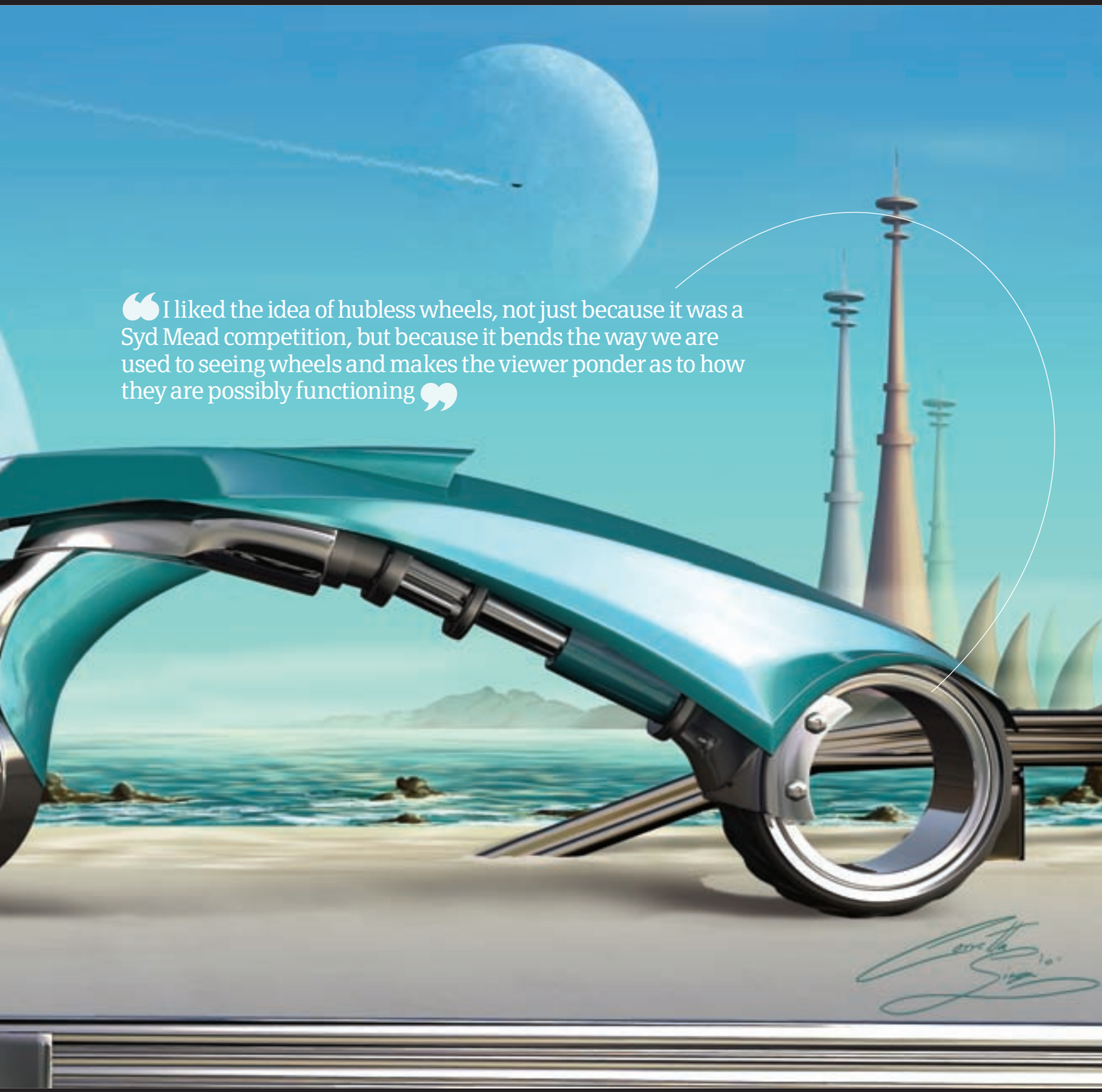

"I liked the idea of hubless wheels, not just because it was a Syd Mead competition, but because it bends the way we are used to seeing wheels and makes the viewer ponder as to how they are possibly functioning"

"With this bike I wanted to capture the feeling of an animal running; kind of like the way a cheetah or a gazelle stretches its body when running full tilt, with long curves to make it feel organic"

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3DArtist

Masterclass

Digital artists, from amateur to pro, use the high-quality, flexible models from Poser. Christian Darkin discovers how they interact with other 3D software

A Get the most from your Poser models by importing them into other programs

Integrate Poser with other 3D packages

Christian Darkin looks at workarounds to import Poser models into mainstream apps

Poser figures are some of the best animated human models on the market. They're infinitely customisable and thanks to a large community of enthusiastic users, there are several places you can buy custom clothing, textures, poses and props at very reasonable prices.

What you can't do so easily is integrate Poser with the rest of your 3D tools, moving your Poser figures into 3ds Max, LightWave or Maya and taking advantage of the rendering and animation tools available in those programs. However, there are ways – and here, we'll be exploring a few of them.

The problem with using Poser animations in another package is not the models themselves. It's easy enough to output your Poser figures in formats other programs recognise. Simply go to File/Export and you can save out your figure as an OBJ file, a LightWave file or a 3DS file. From there, you should be able to simply bring it in to your 3D application, play around with the materials and then incorporate it into your scene.

The problem is that if you do this, you're exporting just the geometry, and the fundamental thing which makes Poser so useful is the fact you can *pose* characters, animate them, alter them with morphs and simulate the movement of their clothing. But the formats in which you do that are unique to Poser, so if you want to animate a character, you'll have to create a skeleton, skin the character, animate it and set up cloth simulations yourself.

However, there are a few workarounds and although none of them are perfect, each has advantages and disadvantages, depending on your needs.

The expensive option: Poser Pro

The Pro version of Poser doesn't allow you to convert Poser animations, but it does allow you to 'host' them in Max, Maya, CINEMA 4D or LightWave using PoserFusion. Hosting means your animated Poser figures appear in your 3D program and do whatever they did in Poser. However they can also be lit, placed into scenes in your main 3D app and, crucially, you can apply materials and rendering effects too.

Pro doesn't allow you to convert Poser models, but it does allow you to 'host' them in other apps

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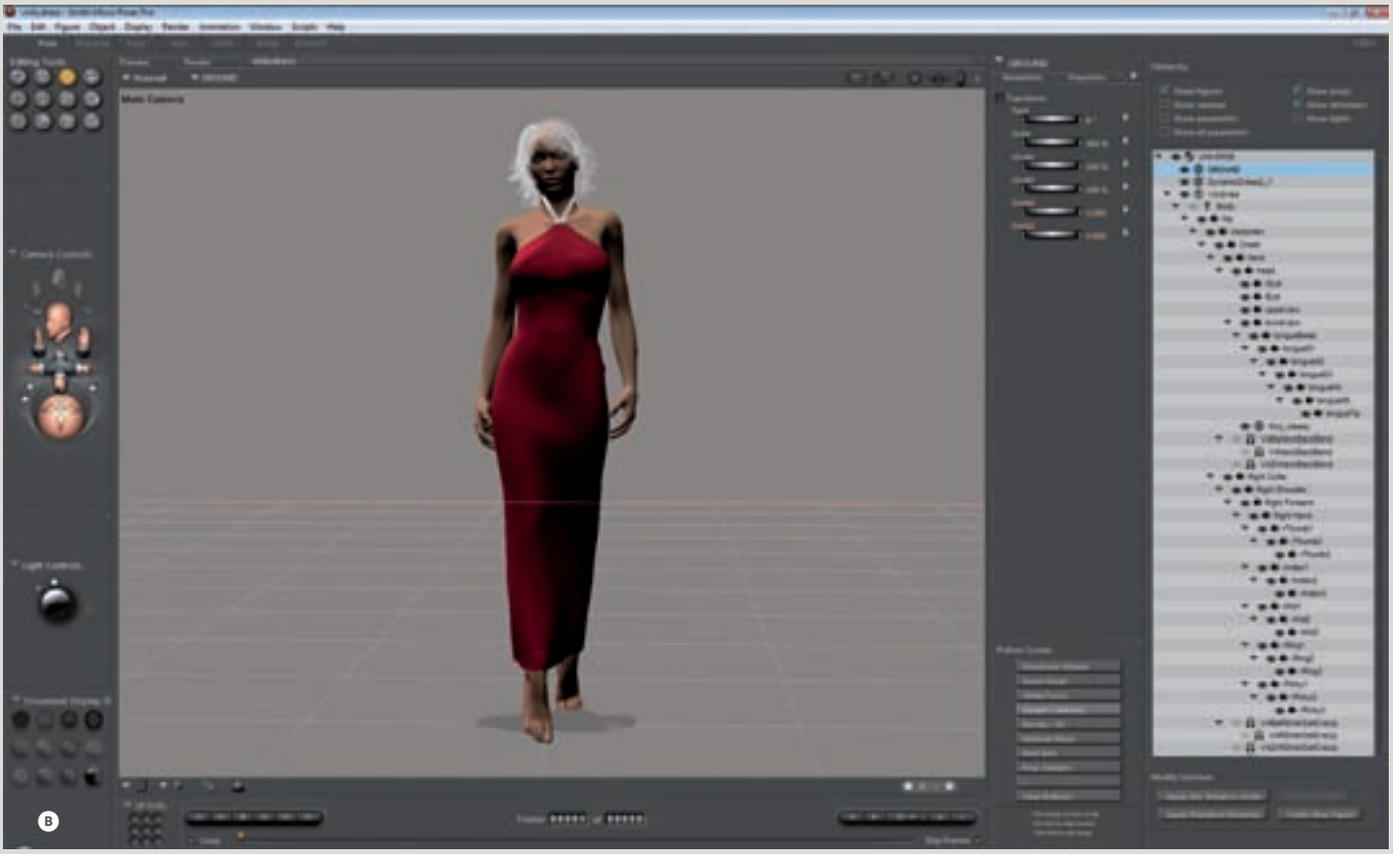


B Make your animation as you would normally

Another workaround

There is another easy option for bringing Poser animations into your 3D package: simply render in Poser and export as a series of still images. You can then create a flat placard in your 3D package and use the animation as a texture on it – with the Alpha channel as a transparency map. Your animation will only ever be a flat placard, but if you keep it facing the camera and your lighting is the same in Poser as in your main application, you can just about get away with it.

01 Create your animation

Although pricey ($500), the biggest attraction of the Poser Pro solution is that you can use any figures you like and add any props and any scenery. You can use Poser's Cloth simulator and any other tools you like. Simply create your animation and save it as normal.

02 Load your 3D application

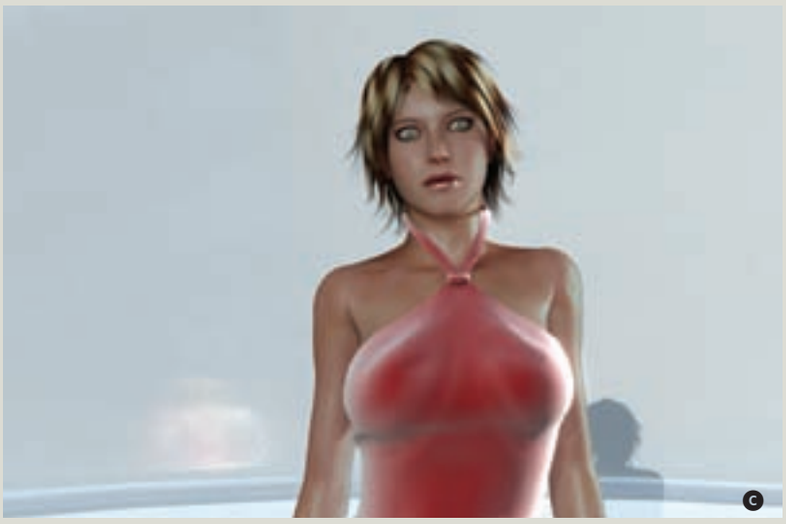
Create a PoserFusion object and load in your Poser file, and your figure(s) will appear animated and ready to work with. Materials will be converted into your package's native format, although you may need to tweak them for best effect. The good news is that you can work on them yourself, ensuring you get the look you want. Here, we've also added Subsurface Scattering and real reflections for the eyes to enhance the model.

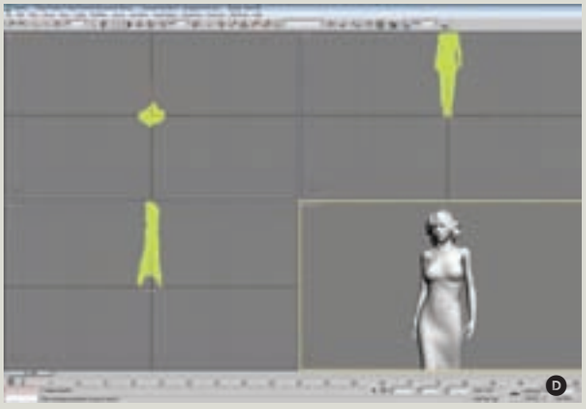
C Import as a PoserFusion object and you're ready

D Unfortunately you only get to work with a mesh

03 Finalise your scene

You are now able to model, animate and light the scene. However, here's the downside: the Poser figure is a mesh – you can't edit it (except by going back into Poser) so it can be very tricky to create interaction and maintain continuity between your Poser models and the rest of your animation. You have to do all of your character animation in Poser.





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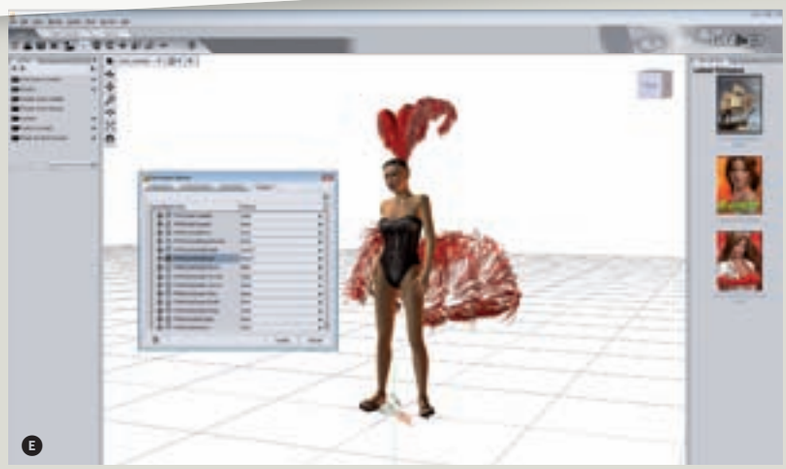

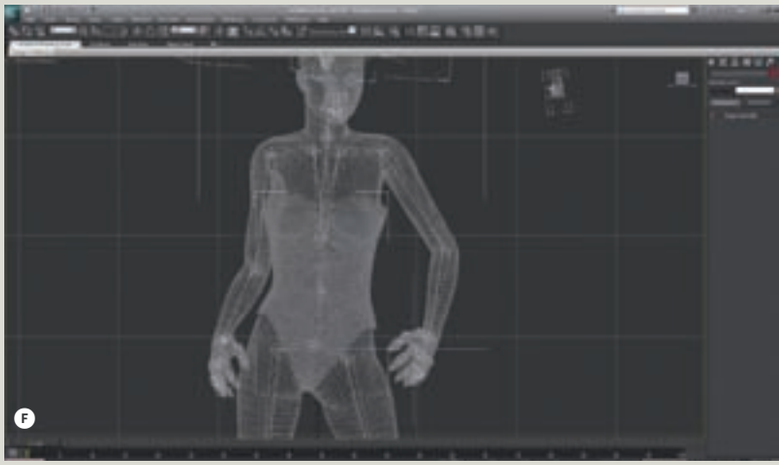

E There are loads of options when exporting so set the ones you don't want to Bake

F You will only see a skeleton after importing into your package

G Morphs should import, ready for you to edit

H You can pick between DAZ or Poser to animate

DAZ FBX export

DAZ attempts to take integration a step further. Buy the FBX Plug-in for DAZ Studio and you can export a figure along with its skeleton and morphs for import into any package that supports FBX. So far, so good. However, FBX is not a mature technology and it's far from seamless...

01 Load your figure into DAZ Studio

Bring the figure you want to export into DAZ. Choose File/Export and you can export the figure as an FBX file. There are a lot of options – including the ability to choose which of the character's morphs to export. You'll want to leave all the morphs you're not animating as Bake, but set the ones you do want to use in your 3D application to Export.

02 Import the figure

Load up your 3D package and import the FBX file. It may take a while, but the result should be your character with a skeleton ready for animation. Any animation you've already done should have imported with the character and you can add to it within your 3D application. However, you'll notice this is just a simple skeleton – it's not a properly set-up character rig. You'll need to add IK and limits yourself along with any other controls you may want. If you're using 3ds Max, it's a standard bone system (not a biped and not a CAT rig).

Online marketplaces

Poser users can buy and sell characters, props, textures, clothing and even animations for a reasonable price online. Whether you're buying or selling, or both, it's worth checking out a few of these online marketplaces. The quality of work varies, but with a bit of research, you can find some real gems:

www.contentparadise.com
www.renderosity.com
www.poserworld.com
www.daz3d.com

03 Morphs

The morphs for your character should import with it, and you'll be able to set and animate them as normal to control facial expressions etc. Morphs can take up a lot of system resources, so try to import only the ones you're going to animate.

04 Animate

The great thing about this system is that you can animate either in DAZ or Poser or in your main 3D app. Plus, you can mix and match, depending on which products you prefer. The downside is that the rigging won't be quite as well put together in your 3D program as it is in Poser and you might have to play around with it before you can get everything to work in harmony.

> "Buy the FBX Plug-in for DAZ Studio and you can export a figure along with its skeleton and morphs for import into any package that supports FBX"

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The free option

The standard version of Poser won't export animated scenes directly. However, it will allow you to export a series of separate OBJ files – one for each frame of your animation. You can't directly import these as a single animated mesh, but for 3ds Max at least, there is a partial solution.

01 Export your animation

Create your animation in Poser, then choose File/Export. Select OBJ as your export format and choose Multi-frame export. Set the frame range to cover the length of your animation and hit OK. Export your figure and props into a new folder. This gives you a series of OBJ files – one for each frame of your animation.

02 Rename your files

If you've got 100 frames, Poser will number your files 'name_0_0' to 'name_0_100'. You need them to be numbered this way for the next step to work, but you'll need to rename them. You can do this by hand if there are just a few frames, but there are batch-renaming utilities you can download online which will do the job automatically (we used File Renamer Basic).

03 Create morphs

Within your 3D application you'll need to set up a morph from the first file to the second over the course of Frame 1, then a morph from that to the third file over the course of Frame 2 and so on. It's a bit impractical to do that for 100 frames, but there are scripts around which will automate the process. For Max, try www.pxfactory.eu/scripts.html (you'll need to make sure Max's OBJ importer has Import as single mesh checked before you start).

I You will get a series of OBJ files for your animation

K Scripts can help with morphing

J Keep an eye on file name structure

L Point Cache modifiers can help with cutting down on data

04 Point Cache modifier

This is great. Your animation is now successfully in 3ds Max. Unfortunately, it's also huge. Masses of data, lots of processing means it'll take about ten minutes to load and save, which is clearly not ideal. But there's a solution. If you add a Point Cache modifier, you can save all the animation data out to a Point Cache file, then delete the modifiers below it. The result should be an animation which is more practical to work with... Well, I never said the cheap route was going to be easy!

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3DArtist Questions & answers

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Need help fast? Join the

The advisors

Maya
Lance Hitchings
www.hitchingsdesign.com

What Lance doesn't know about Maya isn't worth knowing. Here he shows that rim lighting can be just as effective for 3D modelling as it can for photography

Poser
Paul Francis
www.3dartistonline.com/user/stormdraingfx

Paul is our resident Poser expert. This month he's tackling motion blur in Poser for those who like to move it, move it!

Maya

How to create fake rim lighting

"What's an effective way to create a rim light?"

Rim lighting is a photographic lighting technique that has several useful applications. When used subtly, it can define the shape of an object or separate it from the background. Alternatively, when used in a stronger fashion, it can surround the subject with a lighted halo and create an ethereal effect.

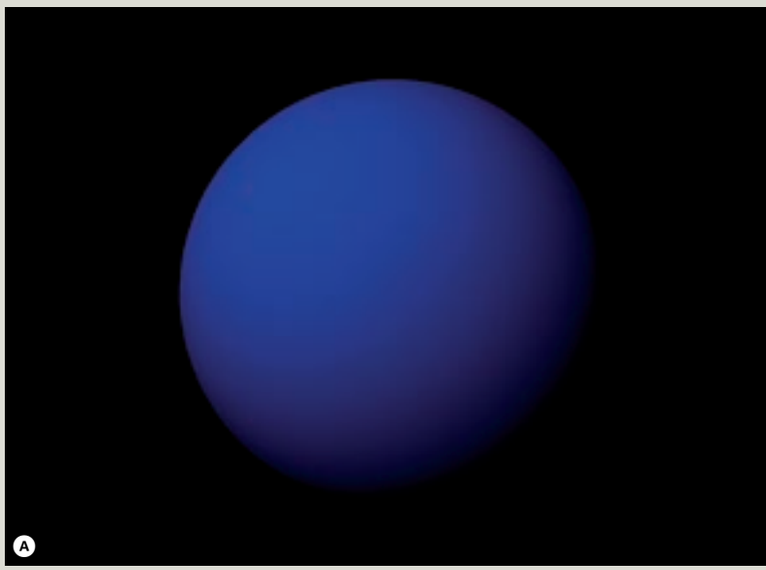
In the real world, rim lighting is a physical phenomenon caused by light glancing off the edges of a surface at an extremely shallow angle of incidence. This dramatic lighting effect is part diffuse lighting and part reflection, and unfortunately, it can be fairly difficult to reproduce using just the standard lights and materials.

However, we can build a shading network that will do a great job of replicating this effect, and without the use of a single light. It's all done with a shading network and the star of this effect is the Sample Info node.

01 In the beginning, there was darkness...

In this example, we're going to use nothing more than the default light to achieve the effect. Although this is never the best lighting solution, it's useful here to demonstrate how well this technique works without any additional lights.

We'll start by applying a simple Lambert shader with the Color attribute set to blue. We'll apply this shader to a sphere against a black background. As you can see in the first render, pretty boring, and it's a bit tricky to pick the sphere out from the background A.



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CINEMA 4D

Daniel Lovas
http://lovas.cgsociety.org/gallery

Daniel is here to solve your CINEMA 4D woes. Following on from this issue's lighting feature (from page 28), Daniel reveals how to create realistic caustic effects

3ds Max

Ryan Knope
www.ryanknope.com

Ryan is a master when it comes to 3ds Max. This issue he considers how an Ambient Occlusion pass can transform your renders

Send us all of your 3D problems and we'll get them sorted. There are two methods to get in touch with our team of expert advisors...

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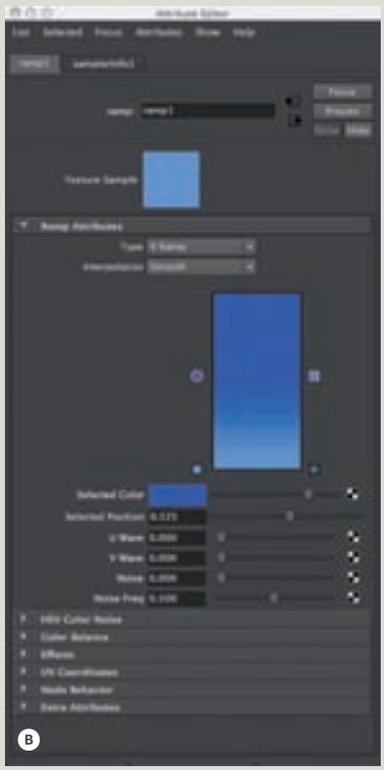

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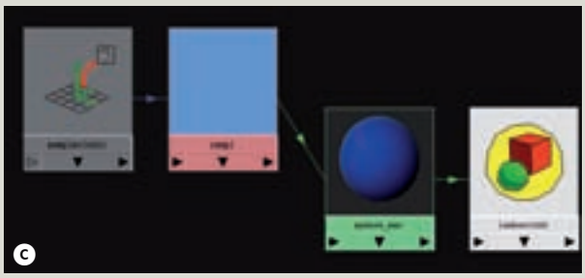

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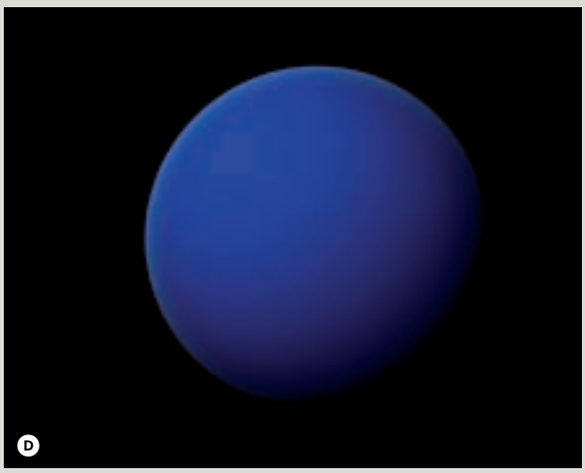

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02 The Ramp and Sample Info nodes

We'll start building our shading network by bringing in a Ramp texture node. Set the Type to V Ramp and the Interpolation to Smooth. We'll need two colours, a darker blue set at about the mid-point, and a light blue at the bottom of the ramp gradient. Plug the ramp into the Color attribute of the Lambert shader.

We'll use a Sample Info node to map the ramp instead of the Place2DTexture node, so delete the Place2DTexture node. Create a Sample Info node, and use the Connection Editor to connect the Facing Ratio to the ramp's vCoord. (Open uvCoord input to expose the vCoord.)

The Sample Info node is now mapping the colour at the bottom of the ramp to any surface that is facing 90 degrees away from the camera (which, in this case, is the edge of the sphere), while the colours at the top of the gradient are mapping to any surface which is directly facing the camera B C D.

03 Lost in space

But what about if you use a File node to plug a bitmapped texture into the Color attribute of your material, instead of plugging in a Ramp node? Can you still use this technique? Absolutely.

Let's start with a texture map of the planet Earth plugged into our material. As before, set against a starry black background, the Earth doesn't stand out very well E.

E

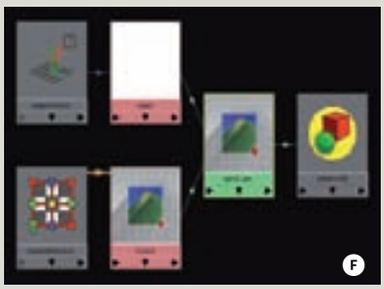
04 Let there be light

We'll need a Sample Info node with the Facing Ratio plugged into the vCoord of the ramp gradient. The ramp will still need to be a V Ramp, but this time we'll use a 50% grey as the mid-colour, and white as the bottom colour. We'll overdrive the white value, setting it to about 3.0.

Next, plug the ramp into the Ambient Color attribute of the shader. The Facing Ratio of the Sample Info node is now setting the Ambient Color value to white along the edge of the Earth.

You can control how bright the rim light is by the value you enter into the white colour in the ramp. Overdriving with higher values will make the rim light brighter. The brightness of the rest of the Earth is controlled by lightening or darkening the grey colour of the ramp.

Using a Ramp node and a Sample Info node in this manner can be very effective across a wide variety of materials F G.



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3DArtist Questions & answers

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Poser

Blurred vision

"Can I use Poser to simulate motion blur in a render?"

This is a good question – and a timely one – as I have only just discovered for myself that Poser can produce 3D motion blur in a render, so the technique is fresh in my mind. Study the main image for where I used it; in this scene, I was reluctant to render the elements individually, and wanted to achieve as much of it as possible in a single render. Now that I know Poser can do this, I no longer have to resort to Photoshop for the effect. It's a great way of achieving blur in an image where compositing figures over a background or separating out individual elements isn't possible for whatever reason. Moreover, unlike the simple 2D smear you would achieve in post, it really is a 3D effect, where the movement producing the blur can be in any axis, and the shadows of the blurred objects are blurred too, although not their reflections! As usual with Poser, the implementation is unique and relies on the fact that Poser can produce animations as well as still images. Don't let that put you off, as motion blur is a surprisingly simple effect to get the hang of.

01 Understanding the concept of motion blur

In order to illustrate the basic concept, I set up a simple test scene of a low-res sphere and a flat plane to catch the shadows; the sphere will be moved slightly during a two-frame animation, and Poser will use this to calculate the blur. At the bottom of your main screen, you will see the two windows of the frame counter used in Poser animations, which by default reads Frame 1 of 30. For the best effect, you should enter the figure 2 in the right-hand window; click OK on the warning that pops up about deleting frames.

3D Motion Blur in action on a simple scene – note that the shadow of the ball has blurred too

The wings are moving in 3D, and also twisting as they do so; one wing is static for comparison

02 The illusion of movement

Ensuring that everything in Frame 1 is set up how you want it, move the yellow triangular slider to the right – you should see the frame counter change from 00001 of 00002 to 00002 of 00002. Now take the element (in this case the sphere) which is going to be blurred, and move it to a new position; the greater the amount you move it, the more it will be blurred in the render. In Render Settings, make sure you've checked 3D Motion Blur, and render your image at a high-quality setting. The ball blurs nicely, and looks like it's in motion.

03 Moving on

Of course, a moving ball isn't that exciting, but it does illustrate the technique nicely. For the pixie-figures in the main image, I decided to use motion blur sparingly on the wings and made use of the 3D element of the Motion Blur feature. Each wing was not only moved along all three axes, but it was also twisted slightly. The Motion Blur feature tracked this motion and an added bonus was the blur on the highlights, which I hadn't counted on, but which really adds to the dynamic effect. Overall, this is a sophisticated feature in Poser which is very easy and effective to use, so get a move on and try it!

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Shedding light on caustics

"How do I create caustics with colour dispersion?"

In 3D graphics the caustics effect refers to light that is reflected or refracted by a curved surface. Sir Isaac Newton established that refraction causes white light to separate into its constituent colours. Newton's contribution created a new understanding that white light is a mixture of coloured light, and that each colour is refracted to a different extent, corresponding to differing wavelengths. This separation of colours is known as dispersion. While most modern rendering engines can, among other things, effectively simulate the caustics effect, only a few of them take into account the fact that different wavelengths of light have different refraction indices; the CINEMA 4D renderer, unfortunately, is not one of them. So while using the caustics effect in the program, you'll always get a 'compact', monochromatic caustics pattern without colour dispersion. While it might be satisfactory for 90 per cent of 3D tasks, sooner or later you might run into a situation that, for the sake of visual accuracy, might require taking the dispersion phenomenon into account.

There are many compositing and other tricks to get a correct, or at least an approximate, simulation of colour dispersion in CINEMA 4D. I am going to describe probably the simplest route, which is quite fast, effective and (almost) physically correct. We will use CINEMA 4D's animation system to generate three animation frames. At each frame, the colour of light will be adjusted (red, green, blue) and the refraction indices of all transparent materials will be animated to slightly different values. Once we have all three frames rendered, they will be loaded into an image-editing or compositing program where they will be converted to greyscale images, equalised and finally merged in as R, G and B components of a new final image.

Preparing the scene

Start by creating some transparent objects, a light and an underlying surface that will receive the caustics projection. In the transparent materials' Transparency settings don't forget to set the Refraction Index to correct values, for example 1.3 for water or 1.4 for glass, etc. For the purpose of this tutorial I used a mainly grey background to emphasise the final colour effect. In Render Settings, under the Effect tab, activate Caustics.

Animating R, G and B

Set maximum project time to 2 frames. Frame 0 will generate the Red image, Frame 1 the Green one and Frame 2 the Blue. For each transparent material animate the Color so it changes from red via green to blue, then animate the Refraction parameter so it changes from (the original value – n) via (original value) to (original value + n), where 'n' is a value between 0.02 and 0.06. Don't be afraid to experiment at this stage for best results.

Merging it together

Render the animation and then load the three rendered frames in Photoshop or similar compositing software. Convert them to greyscale then auto-adjust contrast (dynamic range) for each of them. You should get three greyscale images that look more or less alike. The final step is to join the images into a single RGB image: in Photoshop, within the Channels palette menu, select Merge Channels and then select the correct image sequence in the pop-up dialog.

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Questions & answers

Welcome to the Q&A section where we answer all of your technical quandaries on the most popular 3D programs including Maya, 3ds Max, CINEMA 4D and Poser

Need help fast? Join the

3ds Max

Using Ambient Occlusion

"What are the benefits to Ambient Occlusion and how do I use it?"

Using an Ambient Occlusion pass can be essential to object detailing. This is often overlooked during rendering. The Ambient Occlusion pass is not difficult to set up and renders extreme benefits in both time and quality.

Ambient Occlusion is often used to bring in details of objects that are close together or touching. It brings out the details in the geometry created that are usually lost in the colour/standard render pass. Objects that are closer together, such as 90 degree corner walls or objects sitting on a table will receive necessary shading, being darker in those areas. In the main image you can see the differences between the colour pass and the final one with the Ambient Occlusion added.

An Ambient Occlusion pass can also be a quick fix for faking Global Illumination and soft shadows. This pass will work with any scene or even objects. Highly detailed objects such as spaceships, vehicles or even product renders take on a much higher quality with an AO pass.

When setting up an Ambient Occlusion render, it's important to keep in mind whether or not you are using any material displacement. If you are using material displacement then you will need to create another Ambient Occlusion material. This secondary AO material includes the Displacement map under Extended Shaders. If you are using two or more AO materials then you cannot use Material Override in the render processing settings.

If you are using a single Ambient Occlusion material, watch for objects blending into each other. It looks almost like they have melted together. The fix for this is to copy and rename a second AO material and apply it to one of the objects that are blending together.

Since this Ambient Occlusion pass is a secondary render set/layer, it can be used for just about any style of render. For example, it can be used as a nice clay render, without having to set up lighting. It can also be used to define masking on a cartoon-style render, thus giving the effect of both cartoon and 3D at the same time.

There are some finicky parameters to remember, but once you set it up enough times it becomes almost automatic.

Base scene

Render out the base scene with your lighting rig, materials and objects. Make sure that you use a saved or camera view. This will ensure that the Ambient Occlusion pass matches up perfectly. Otherwise, you will have a mismatching set of layers, which will render it unusable.

Once the scene is rendered out, we're ready to try an Ambient Occlusion pass.

Materials

To create an Ambient Occlusion material there are several methods. The route I choose is to use a mental ray material and add an Ambient/Reflective Occlusion map to the Surface slot.

You will need to test the Max Distance to get the look you desire. I usually begin with the height of my first floor in the rendering, then test from there. (Remember to keep in mind any objects that utilise Material Displacement.)

Once the Max Distance is set and tested, I turn my Samples up to 128. This will create a more refined render.

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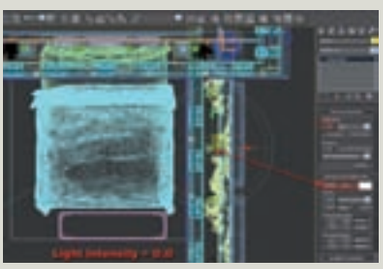
Lighting

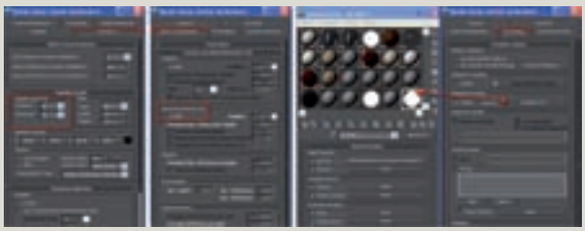
For an Ambient Occlusion pass, you want to turn off all lights except one. For that last light you want to change the Multiplier to 0.0. By doing this, you remove all lighting and the Ambient Occlusion map will generate the light it needs.

If all the lights are deleted or turned off with the checkbox, 3ds Max will place the default lighting back into the scene, which we don't want as default lighting will affect the Ambient Occlusion.



Render options

When I am rendering out an Ambient Occlusion pass I turn off Global Illumination, make sure I have the Material Override set if intended and set my Samples to the desired levels. When rendering, depending on the complexity of the objects and materials, I set Sample values to 4/16 or higher. If you are using material displacement on an object or objects, remember to turn off Material Override and apply the alternative Ambient Occlusion materials to the scene objects manually.



Environment and Exposure Control

In the Environment Tab you need to turn off Exposure Control and set the background colour to white. The Exposure Control needs to be off because there are no longer light-emitting elements other than the material itself.

Any sun or daylight system should no longer be active, so using the Exposure Control will most likely change the results in a negative way, turning objects either white or black.

Adding the pass in Photoshop or After Effects

Adding the Ambient Occlusion pass in Photoshop or After Effects is quite easy. Add the render in as a new layer, above the colour render. Now set the blending mode to Multiply. You should now notice that the white areas of the Ambient Occlusion pass disappear, but the darkened areas remain, accentuating the scene's details. At this point you can adjust the levels and opacity. In some cases I add a layer mask and adjust certain areas of the AO layer's opacity.

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3DArtist

Back to basics

3D artist Rob Redman gets things moving in this introduction to animating characters

CINEMA 4D

Simple animation

> There are many tools, techniques and workflows that can be employed to tackle animation... In this issue we're going to look at ideas which can bring a touch of life to a simple scene

If you've been using 3D to create stills or just haven't known where to start when it comes to animating then this article is for you. In this first tutorial on animating characters we will look at bringing a cartoon figure to life, without using any bones or complicated rigging. The process of adding bones, skinning, etc, will be covered next month, but for now let's take things gently and ease our way into learning a few simple tools, which can be used for many kinds of animation. In this instance we will take a very simple character model and add some lifelike characteristics.

Before we jump in, I'd like to recommend a book that every animator should read: *The Animator's Survival Kit*, by Richard Williams. This tome is an invaluable aid to artists of any level.

A Even the simplest of objects can have life breathed into them

B A must-read guide for newbie animators by Richard Williams

The next level

Most people's first steps into the world of animation tend to be moving cameras around or animating something that's abstract or flying. There are usually a couple of major reasons for this: animating characters can be daunting when you first get started and it can be very time consuming.

While there's nothing wrong with this and animating simple objects and setting up an animated camera that zooms around a logo or simple scene can be highly rewarding, a time will come when you want to do more.

There are many tools, techniques and workflows that can be employed to tackle animation and, depending on which artist you ask, you will get a different outlook. In this issue we are going to look at some ideas which will help you add a touch of life to a simple scene. We will look at using deformers to add motion to our character, giving a subtle but noticeably organic feel to him. Next issue we will look at building a rig, with bones, skinning and some of the other more complex tools that people find off-putting. This may sound as if it's the wrong way around, but I think if the basics of timing and keyframing can be understood then animating a rigged figure becomes a much more natural process.

We will start by taking the separate elements of the figure and lining up the axis points for them, so they can be rotated in the proper way. I've done this for all of the joints except the left arm – purely so we have more steps on the fun stuff! I left one for you to do, however, as it can be an important step and if you've never played with the Axis tool, you may

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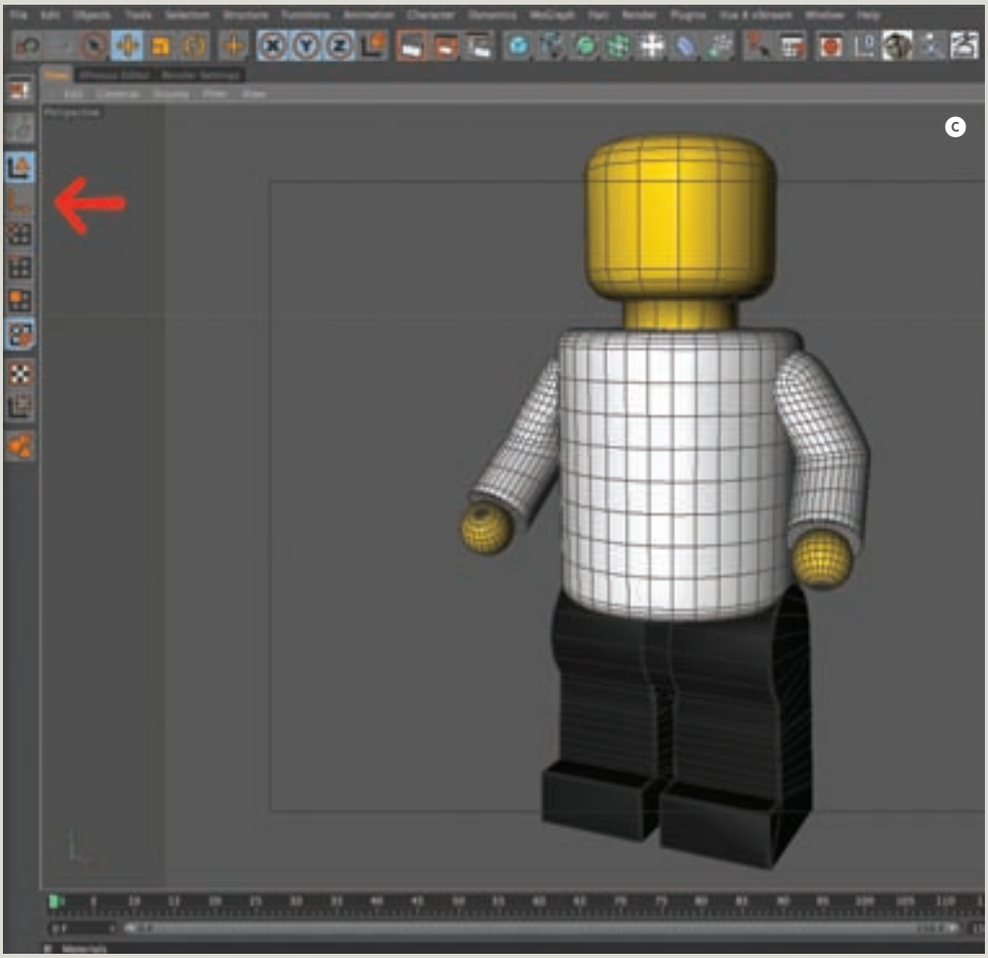

Keyframe values

The example we have been working on here is pretty simple, but when working on a more advanced and complicated scene, it can be tricky finding the keyframe you are looking for, eg to make adjustments. However if you select the object and drop down the list of animated properties (in the left panel of the Timeline menu) things become more obvious. You can also hover over a keyframe to see its values, which is very useful!

be left scratching your head a little. Once done this lets us animate him more easily and, even if he stays standing on the spot, we can produce a convincing animation.

Following this we will add a series of deformers, which most digital artists (myself included) use more commonly for modelling, but in this case they will enable us to create a simple movement, which can be looped to create the impression that he is breathing.

Adding another we will set up a stretching move and, with a third, a bend. For this article we will have him stretch as if limbering up and then progress to touching his toes. A simple hard plastic object wouldn't be able to do this in real life, but that's why animating is so fun. We can take this and make the hard plastic bulge, twist, bend or any other kind of movement we want. Little touches like this are what make simple characters believable and, after following this guide and trying out the techniques for yourself, I think you will be surprised at just how much you can achieve.

There is only space here for a limited workflow, nevertheless I urge you to look at the other deformers, investigating what they do and seeing if you can apply them in similar ways.

Get yourself on creative forums such as Vimeo and hunt around for animations that particularly inspire you. Try to see past any big moves and look for the little ones, maybe even timing things with a stopwatch, to learn the timing, which is possibly the most important aspect of animating characters.

Better still, for the more theatrical, prance around in front of a video camera and record yourself moving around. Build up a library of reference material, which you can turn to whenever you need it. You may find you exaggerate it in 3D, but the way one movement flows into the next will be much the same.

Read up online or in books, and learn some of the major theories behind animation (there are many!). I know it sounds boring, but the research really will pay off in the long run. Learn about anticipation and the difference between timing and spacing. If you can get to grips with the basic principles, your animations will shine and, when we move on to rigged characters, you'll be able to make even the humble walk cycle look good.

Okay, so let's get down to business. Open up the scene file named 'ToyManBase.c4d' from the disc and familiarise yourself with how it is constructed. It's a basic character made from fairly simple shapes, but you will see the mesh is perhaps denser than you might have expected. I've done this so that the deformers work most effectively without having to add steps to the tutorial. If the body were just a box, you wouldn't see what you expect when trying to manipulate it. We want it to bend smoothly – ie to create the impression that his spine is arching. In normal circumstances you would animate a lower polygon mesh and then apply a HyperNURBS to smooth it out. However, I've mostly jumped this step to keep the workflow streamlined.

One important point to bear in mind throughout this process is that the deformers have various modes. You can set their area of effect to stay within the purple boundary of the object or to affect the scene as a whole. More often than not you'll only want it to affect the one object, so keep an eye on the Attributes Manager if things begin to look odd.

C The overall scene, with the objects in the right place (except the left arm). Note the Axis tool

D Add a deformer to the scene, increasing the strength to boost its effect

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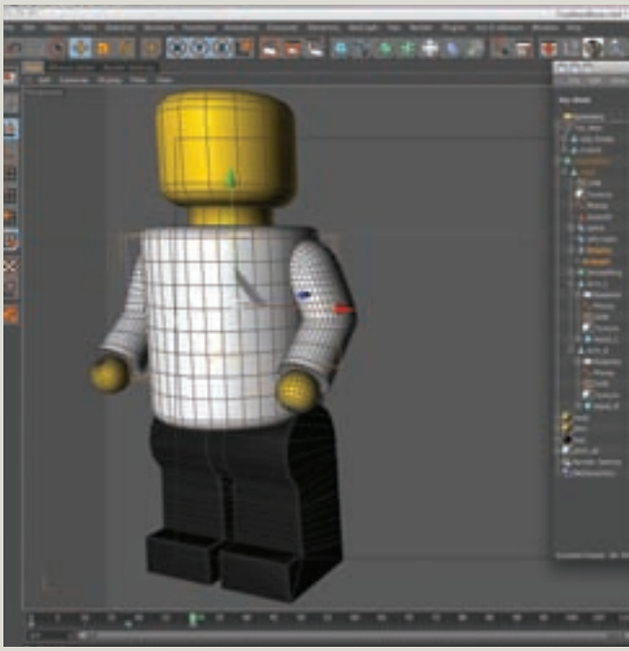
3DArtist Back to basics



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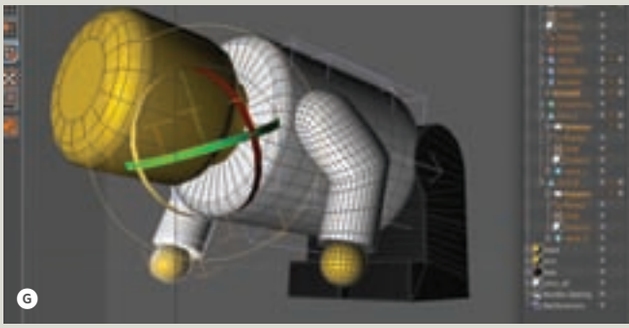

G

Animation made simple

01 Finish axis points

Open the scene and familiarise yourself with the different components of the model. Choose the Axis tool and analyse how the axis points have been moved to the points that the objects would hinge around. The left arm has been left for you to do, so use all four views and move/rotate this one into place. Make sure that the hands are children of the arms, so that they rotate with them.

02 Add a Bulge

Now add a Bulge deformer, from the Deformation palette. Set the sizes to fit the body, but try to leave the top and bottom unaffected. This is going to get him breathing. I set up deformers before parenting them, so up the Strength option a little to see what you're working with and set the mode to Within Box or Limited. We are going to make him breathe by keyframing the Strength parameter. This is done by Ctrl-clicking the little circle next to the word Strength E.

E Hit Play and watch your model take his first breath

F Now the deformers are in place, you can see a less rigid character with more personality

G Our character can now touch his toes, but he still looks a little stiff

03 Take his first breath

Drag the bulge onto the body in the Object Manager and play with the Strength setting to see how it affects the mesh. Decide on a level that looks right to you. We can now set a keyframe at Frame 0 with the Strength at 0%. Decide how long you want one out-in breath to last and set another 0% Strength keyframe at that time. If the breath is equal in and out, then add a keyframe halfway between the two previous keyframes, at your maximum chosen Strength (mine was 11%) F.

Preview renders

Sometimes we need to see full-speed previews of our animations, but don't need all the bells and whistles of a full render. In the Render Settings menu, under General, set the type to Software preview. This allows you to render out an animation very quickly, with the look of your viewport. The speed of these preview renders enables you to keep animating much more efficiently by letting you keep on top of timing and spacing without having to wait too long.

04 Bend it

Next we're going to add a Bend deformer to give us the curve of the spine. So, as before, set the size and up the Strength to see if it's in the right position, as you may need to rotate it to match how a real spine would work. Once done, make it a child of the body. You can add more bends, if you like, to add a movement to the left and right. You only need one per axis, as the Strength setting can be adjusted to negative values as well as positive G.

05 Get animated

So let's rig our little animation. Set the keyframes where you want them. You will learn timings best from practice and experience so I won't tell you where to put them – just do what feels natural and learn from trial and error. First we will set keyframes for the body rotation, upright, bent over and back up again. For the bent-over keyframe, also set keys for the arms, so they hang more naturally. Then move

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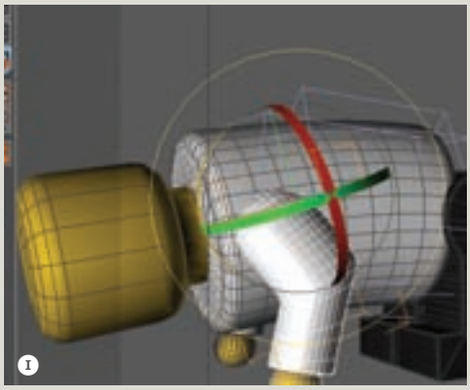

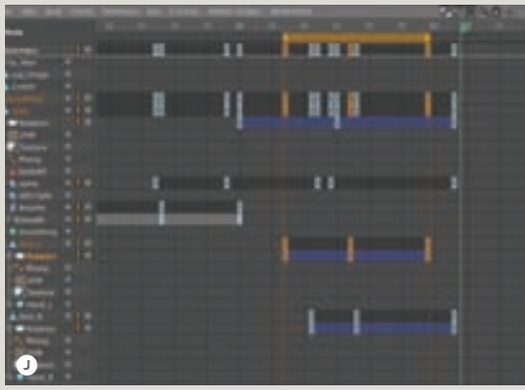

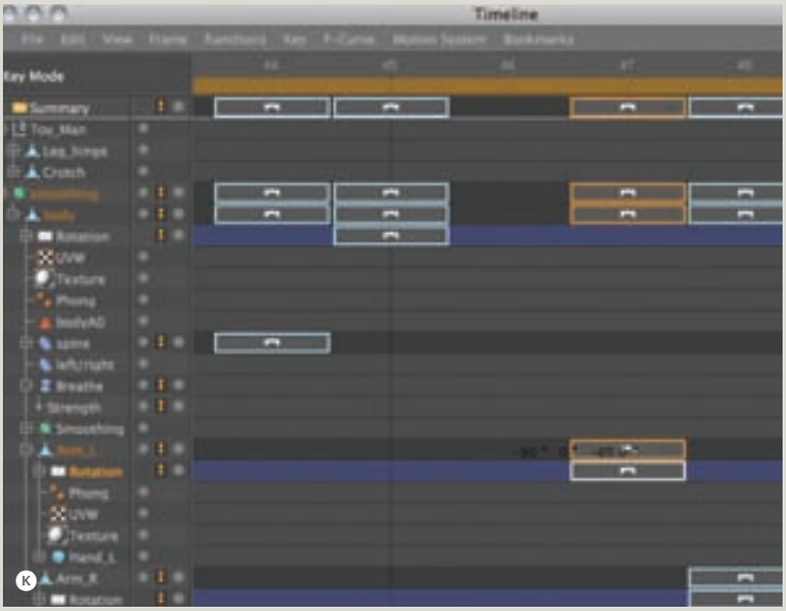

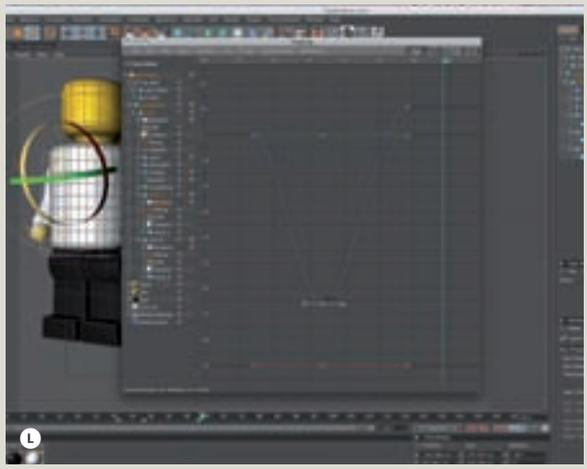

> To add realism, start analysing your keyframes, looking at your references

them back up. Play the scene back and adjust the keyframes if needed H.

06 Add a stretch

At this point I'm going to go back to a little before the toe-touching move to add a slight stretch before the model bends over. Rotate the body back a little – just a few degrees should do it – and keyframe this. Then at the point he is rotated back, increase the Strength setting of the spine bend to add a more organic feel. Ask a friend to make the movement or record yourself (even looking in the mirror works) to estimate how much looks right. Keyframe the Strength parameter up and back down again.

07 Curve time

Now we need to do something similar for the toe-touching move. Once again, I recommend working from some reference. You will see that the spine curves over slightly and a straight rotation from the hips just doesn't look right at all. Set a keyframe for the spine Strength setting when he's upright, then move on the timeline to where he's bent over and adjust to add a small curve to his back. Play and tweak if needed I.

08 Refine your keyframes

At this point resist the urge to add more bends, stretches or other moves and start refining what you already have. Currently, if you did things as guided, your man's arms move in unison. To add realism and convince the viewer, start analysing your keyframes, looking at your references and making adjustments. The arms should go down together, but not in such a synchronised way. In the Timeline dialog, select the left arm from the Object list. You'll see an orange band highlighting the keyframes. You can drag this to offset the motion or drag either end to lengthen/shorten the move J.

09 Breathe in, breathe out

Now we need to keep him breathing. We could just select the breathing keyframes and, in the Timeline menus, choose Key/Cycle and set it to the length of our animation. But I'm going to actually add a heavier, faster breath just after he stands, to support the idea that he's exerted himself. I set the Strength option to 0% at the point he returns to upright, then add a larger and faster keyframe, followed by keyframes somewhere between the two, to show his breathing returning to normal. This is more condensed than it would be naturally but it works K.

10 Tweak timings

By default, CINEMA 4D displays just the keyframes themselves as points on the timeline. These keyframes are also all set to ease in and out, smoothing the transition from one to the next. In the Timeline menu go to View and activate the F-Curve Mode. You will now see the curves for the selected object's keys. You can adjust the easing by grabbing and moving handles, so spend some time adjusting as you see fit. For example, the start of an intake of breath tends to be faster than the rest, so adjust to suit. Clicking a point adjusts both sides of the curve, while by Shift-clicking, you can grab on to a particular handle L.

H A bit of pre-bend stretching has really helped inject some life

I Note the much more natural curve to his body as he now bends down

J Adding more believable motion by adjusting keyframes

K Zoomed in to a negative value keyframe (such as Step 10), you can also see its spline/curved keyframe

L You can keep refining the animation, but for now we have very natural movement

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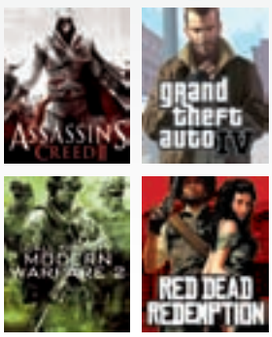

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3ds Max enables you to model anything, from diamonds to tractors

3ds Max 2011 $3,495

A major update of one of the most established 3D applications

As one of the most important 3D applications on the market, updates of 3ds Max are something of an event. In the last couple of years, Autodesk has boosted power, streamlined workflows and added new tools, but not revolutionised the software.

3ds Max 2011 changes all of that. It's a major update and introduces several new features, three of which really stand out.

CAT (or character animation toolset) is a brand new character animation system which looks likely to replace Biped very quickly. It's flexible, powerful and easy to use.

You can create rigs for anything from a dinosaur to a spider with a single click, but you can make your own custom rig in minutes too. If your creature needs an extra arm or leg, you can add one with a click, while if you want to change the number of links in its spine, that's easy too. Once the rig is created, you can animate using layers. Creating a walk cycle is pretty much instant and you can customise the walk easily – whether your character has two legs or a hundred.

There's also a muscle feature which you can use on CAT characters or any other rig you like. Muscles allow you to easily set up bulging skin and have collision detection too, so you can make the skin of your character slide over its muscles and bones in a much more realistic way than before.

3ds Max 2011's second significant upgrade is the addition of a new renderer – the Quicksilver hardware renderer. Whereas most renderers make use of the computer's processing power to do their work, Quicksilver uses the power of the graphics card, making it lightning fast.

Quicksilver is a proper raytracing renderer making use of most of Max's materials and maps (with a few exceptions – eg Cellular maps don't work, Subsurface Scattering isn't supported and there are a few other omissions). It handles Ambient Occlusion, Reflection and Indirect Lighting and typically does, in around a second, what it takes mental ray a couple of minutes to reproduce

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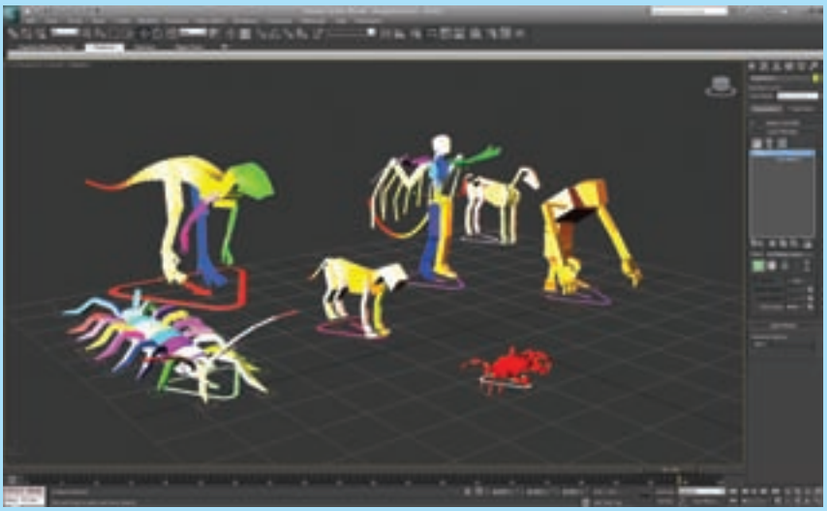
3ds Max's new Quicksilver renderer makes use of the graphics card, making it lightning fast



The new character animation toolset (CAT) makes producing and animating character rigs much simpler

The good & the bad

- ✓ Strong 3D toolset
- ✓ Powerful new character animation tools
- ✓ Three renderers including Quicksilver and mental ray
- ✓ Compositing package included
- ✘ Simulation of cloth and fluids could be improved
- ✘ Competing packages have better facial animation
- ✘ No 3D motion tracking (MatchMover is included with Maya)

Essential info

www.autodesk.com
www.escapestudios.co.uk
- $3,495
- £2,975 (from Escape Studios)

OPERATING SYSTEMS
- Windows 7 Pro, Vista, XP Pro

OPTIMAL SYSTEM REQUIREMENTS
- Pentium 4 1.4GHz or equivalent with SSE2 technology
- 3GB RAM
- 2GB swap space
- Direct 3D 9 or 10 or OpenGL graphics card

The Composite toolset now bundled with Max is easy to use and powerful

(though this will obviously depend on your particular graphics card).

Quicksilver is good, and its speed makes it excellent for doing test renders as you work. You can knock up a test animation in a few minutes, or get an idea of how a complex image will look in a few seconds. It might even be usable as a production renderer for some projects. However, this is not mental ray, and if you want real subtlety in your work, you're still going to need to switch to a different renderer for your final images.

Finally, Max is now bundled with Composite – formerly known as Toxik – Autodesk's very own compositing package. While Composite can't compete with After Effects on extendibility or its range of features, it does have a lot going for it. For one thing, its node-based structure is very easy to get on with if you're not a compositing expert. Its colour correction tools are excellent and very intuitive and it's well geared towards constructing shots which are made up of multiple render passes.

As well as these features, Max 2011 also features a new node-based Materials Editor which makes complex materials and scenes a lot easier to organise. In addition there are some great tools for painting textures in the viewports. You can now paint onto a 3D object with Photoshop-style paint tools directly inside Max. It's a powerful bonus which will allow you to do a lot of your texture painting without having to leave the program.

In short, 3ds Max 2011 is a major overhaul of the software. It will change the way most artists work, and for the serious 3D creative, the upgrade is well worth considering.

Our verdict

Features	9/10
Ease of use	8/10
Quality of results	9/10
Value for money	7/10

> "This is a strong update to an already powerful system"

Final Score 9/10

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Xfrog 3.5 & XfrogPlants $149-$299

Create vegetation or tinker with the biology of existing flora and create your own leafy paradise

Putting a detailed Xfrog tree – an Acer Palmatum – to work in Vue, alongside a couple of orange Gerberas

The Xfrog editing program can either create flora from scratch or tinker with the biology of existing models

Last issue we looked at the various options for those creating CGI scenery and top of the list for realistic plantlife were the offerings from Xfrog. Planetside offers a great package of Terragen 2 with the entire XfrogPlants 22-volume library and Xfrog 3.5 program for $999 but you can also get some of the Xfrog goodness if you have Vue or a standard 3D package. There are two distinct product lines, despite the similar names.

Firstly there's Xfrog 3.5 which is a standalone program for creating and editing plants and flowers. This retails at $299 for the standalone Windows version but there are plug-in versions for CINEMA 4D and Maya that cost $100 more. Xfrog 3.5 comes with 60 plants in the basic library, in native XFR and C4D formats. Before you panic, you can export them in a variety of formats including the generic OBJ. The program itself can be used to create entirely new plants from scratch through the use of ten different components. There are four that are used to build the basics: Simple, Horn, Tree and Leaf, then the next four increase the foliage and determine how it all spreads: Revo, Hydra, Phiball and Wreath. Finally the Attractor and Hyperpatch are used to distort or determine how groups of the plants react to each other. The components either use numerical input to set specific parameters like number of leaves or branches, or come with editable waveforms that control the look in a static form, or determine how the plant will evolve over time. Yes, there's even an animation option so that you can have a forest grow before your very eyes.

The interface is pretty minimalist, but it is functional and, most importantly, comes with a great real-time preview. This can be the wireframe, a shaded model, or best of all, the gouraud shaded version.

Unless you want to create a specific piece of flora the easiest option is to load up one of the basic plants and tweak it into something different. This is the path a number of effects studios use when creating CGI vegetation.

The easiest option of all when it comes to filling the screen with high-quality vegetation that looks good close up is to buy a pack from the XfrogPlants range. The existing range of 22 volumes that comes with the Terragen 2 Megabundle package has just been expanded with Home Garden, Agriculture, Landscaping and Oceania 1, 2 and 3. The rest of the range covers general flowers, groundcover, houseplants, then themes such as species native to particular regions or temperate zones; there's even a prehistoric pack of vegetation. Pricing is $149 for older Version 2.0 packs that come with 20 species in three age variations. The plants are supplied in nine file formats covering most of the main apps – sorry, modo fans, but they're OBJ versions as well. There are also low-res renders of the plants/trees with Alpha layers so they can be dropped into the background of existing renders. For the new range, which are labelled Version 3.0, there are 180 plants per pack (20 species with nine variations), which retail at $199 each. There are higher resolution renders available, but you have to specify which format you want the package in, rather than getting multiple formats.

What is pretty clear is that it's fairly easy to make your plant pack go a lot further if you pick up a copy of the Xfrog program as well, since then you can customise any of the plants into an entirely new version. Especially for close-up work, the Xfrog range is top notch, which is why top studios like Pixar, ILM and DreamWorks all use them.

www.xfrog.com

Our verdict

Features	7/10
Ease of use	7/10
Quality of results	9/10
Value for money	7/10

> "Not cheap, but essential for serious creators of nature scenes and plants"

Final Score 8/10

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Antec Truepower New 750W £102 (approx)

Don't let the lights go out on your 3D renders; invest in a new power supply today

Hardware is just as important as software when it comes to commercial rendering

If there's one thing that can often be overlooked when putting together a new or upgraded system, designed for chugging out 3D, it's the power supply. One minute you'll be 24 hours into a massive render, the next the computer will keel over. Unlike software fails, when the PSU gets overloaded it simply shuts down and you lose everything. It's a car crash in computer terms. The Antec Truepower New 750W is one of the latest PSUs in the Antec range that offers solid 750W power at an affordable price. Painted in matte black, the PSU has sheathed cables to reduce clutter/chafing and improve airflow and measures 150 x 150 x 86mm. The four 12v circuits deliver power to myriad hardwired connectors including a 24-pin ATX, 5.25" drive, 3.5" drive, three SATA hard drives, an 8-pin EPS12v and 4-pin ATX12v connectors and two 6+2-pin PCI-E connector for your graphics card. It also has optional modular connectors for another two PCI-E cards and two hard drives/Molex connectors.

The PSU has 80 PLUS Bronze certification which is a system of certification for PSUs ensuring that they are more than 80 per cent energy efficient at 20 per cent, 50 per cent and 100 per cent of the rated Wattage. Testing the Truepower bore those numbers out, possibly down to the fact that some of the hardware inside is actually from a more expensive Seasonic unit. The voltage was also stable on the 12v and 5v rails, if not rock solid. When really putting the system through its paces (with the reviewed FX4800), the otherwise silent fan made a slight noise, but you won't hear it above case fan noises. The bottom line is that you can get cheaper, unbranded units, but if you're going to be working commercially with your rig, this PSU is money well spent.

www.antec.com
www.novatech.co.uk

Our verdict

Features	8/10
Ease of use	8/10
Quality of results	9/10
Value for money	10/10

"High-power and great quality unit at an affordable price"

Final Score 9/10

NVIDIA FX4800 £1,360 (approx)

Take your rendering rig to the next level with a pro-quality graphics card

One of the toughest decisions for the commercial artist or small studio is how much to invest in a graphics card, particularly when workstation cards are so expensive. The NVIDIA Quadro FX4800 is one of the second-gen NVIDIA GPUs with 192 cores, 76.8GB/s memory bandwidth, 128-bit pipeline and a sizable 1.5GB of DDR3 memory. It's a PCI-E 16 card that takes up the space of two slots in your rig and needs extra power off the PSU. In fact, while the minimum spec demands a 500W PSU, you'd be safer looking at something like the Antec 750W unit reviewed above. Outputs include standard DVI-I, dual link DVI and two DisplayPorts.

In hardware terms, the FX4800 is much the same as a GeForce GTX280 because they use the same GPU chip, so in everyday use, you won't see much difference between this and the consumer card. So why pay more? Two reasons. The first is graphical stability and driver support. The FX4800 is designed to be far more solid and, if you do have a problem, you're paying for drop-of-the-hat technical support. On a commercial project, that would pay for itself. Secondly, the FX4800 really comes to life with hungry apps from Max to Photoshop to AutoCAD. So let's talk numbers using SPECViewPerf 11. A fast consumer card will give you these kind of results: Catia – 8, Ensight – 13, LightWave – 9, Maya – 10, ProE – 4, SW – 10, whereas with the proper Quadro drivers and tweaks installed, they jump to: Catia – 25, Ensight – 13, LightWave – 57, Maya – 52, ProE – 10, SW – 42. Much depends on your system configuration, but for workstation apps with critical technical support, the FX4800 makes a lot of sense.

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www.pny.com
www.component-warehouse.co.uk

Our verdict

Features	8/10
Ease of use	8/10
Quality of results	8/10
Value for money	7/10

"A key piece of kit for commercial work when using workstation apps"

Final Score 8/10

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Inside guide t udios, expert opinion and education

Brusher Bailey
Jason Baldwin
www.bunkart.net

> I think the most important skill is the ability to take criticism. That is how we, as artists, get better

Jason Baldwin from DreamWorks talks about his career. Page 106

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Industry news

If you have a hankering to discover what is going on in the 3D industry, these pages are for you. This issue we report on SIGGRAPH 2010 and the major events

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Jason Baldwin

Trace this talented modeller's career from sketching and doodling as a child through to working on *Coraline* and *Shrek Forever After*

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Cinesite

Learn more about this studio which has become a hub for creative movie effects, the latest of which involves a 200lb Great Dane

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Bournemouth & Poole College

Discover more about this college that mimics and uses industry workflows

inside

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A

When art meets technology

CG event of the year, SIGGRAPH 2010, hit Los Angeles with its expected plethora of latest technologies for the CG artist and the industry at large

A The LA Convention Center played host to SIGGRAPH 2010, attracting CG enthusiasts from all around the world including reps from **3D Artist**

SIGGRAPH2010

Didn't get to go to SIGGRAPH but would like to feel as though you did? The CGSociety staff kept a great diary at the 2010 event, which places you right at the heart of all the CG action: **http://features.cgsociety.org/siggraph2010**

SIGGRAPH is all about giving people the ability to express themselves. It's that key event in the CG calendar that allows the creators of new and emerging technologies to step forward and demonstrate to artists exactly what can be achieved, with the right tools.

Autodesk took centre stage on the exhibition show-floor. It's been an intense year for the software giant with the 2011 product releases in April, and the celebration of 3ds Max's 20th birthday. With several SIGGRAPH announcements, including the Entertainment Suites Premium – a big launch for the company that now includes Softimage, with its powerful ICE capabilities – Autodesk's presence was to showcase the one-click workflows and pipelines that the Digital Entertainment Suites now offer. And what was interesting to see was how many of the other companies all inhabiting the space of the LA Convention Center were connected to Autodesk's platforms, in some form.

> "...there were also lots of companies being innovative – that's why SIGGRAPH's so great: everyone is trying to push boundaries"

Alongside the proudly placed Autodesk exhibition stand was NaturalPoint, showcasing affordable real-time motion-capture solutions that accompanied DEC workflow demonstrations on previsualisation and virtual moviemaking over on the Autodesk booth. In contrast, MAXON and NewTek went head-to-head with Autodesk with their own complete software solutions: MAXON celebrating the company's best year yet, and NewTek announcing LightWave 5, the first new release in three years. But as well as these key players, there were also lots of companies being innovative – that's why SIGGRAPH's so great: everyone is constantly trying to push the boundaries of computer graphics.

As well as software applications causing the usual stir of excitement and intrigue, 3D printing and motion-capture solutions were generating their own buzz with exhibition-goers. Motion capture was big news – there's a lot going on and it has been building up over the last few years; right now it's in a really interesting position!

3D printing was also a major talking point, with companies like Objet 3D and Shapeways showcasing the latest printing technologies. With advancements continuing at such great speed, could we be printing 3D objects at home in the not-too-distant future?

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ZBrush 4.0 is unleashed

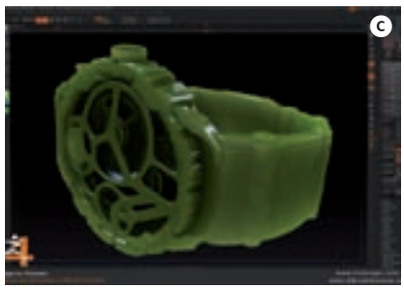
Pixologic celebrates a decade of ZBrush with the launch of version 4.0

Ten years on and the big day arrived: the launch of ZBrush 4.0. And it's evolved with brand new tools and the ability to switch seamlessly between ZBrush and other software apps.

Originally loved for its organic sculpting abilities, artists soon adopted the skills to hard surface modelling in ZBrush. And that gets better in version 4.0; it's now easier and more powerful, allowing you to create vehicles as naturally as you can sculpt a character. More thought has been given to the presentation of your ZBrush work: an animation timeline allows artists to create moving turntables, with the ability to import audio files that can be lip synced – all inside ZBrush! You no longer need to leave the ZBrush workspace, but if you want to, even that's been simplified. The new Best Preview render options have also been added to improve the realism of your renders with Subsurface Scattering, Ambient Occlusion, Advanced Shadows and more.

ZBrush 4.0 is Pixologic's first converging launch for both PC and Mac. To find out more visit **www.pixologic.com/zbrush4**.

B The Special Edition comes in a black metal case, but be quick as the quantity is limited!



C Created and rendered in ZBrush 4.0

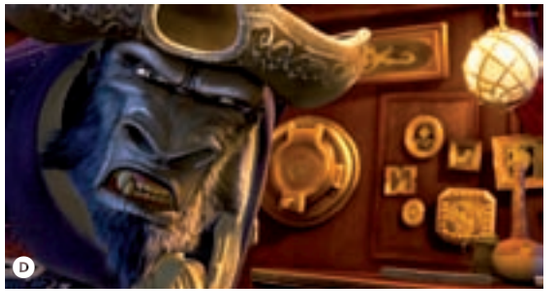
Designed by artists, for artists

MachStudio Pro limits artists only to the scope of their own creativity

MachStudio Pro is a 3D compositing and rendering tool for the second half of the pipeline. Artists can model in their chosen 3D package – including 3ds Max, Maya, etc – and then take advantage of the quicker rendering that MachStudio Pro offers to increase their productivity and streamline the 3D workflow.

Everybody is talking real-time and MachStudio Pro is no exception to the trend. Using the power of the GPU, everything runs live off the graphics card. As a complete rendering solution you can render several passes at the same time (unlike in most 3D software applications where you need to render them out individually) and composite them into a final scene at 3-6fps in its preview mode, and 1fps in its beauty pass mode – and that's when working with a scene that's approximately 25 million polygons. With this level of interactivity you can see the final frame immediately – it's push-button!

Those interested in purchasing MachStudio Pro can pick it up for $4,999 (or £3,333 + VAT from reseller www.bluegfx.com) bundled with the industry-leading ATI FirePro v8800 workstation graphics accelerator. For further information, visit www.studiogpu.com.



D Delacave Studio used MachStudio Pro on its 3D movie *Cinderella*

esc Ask the expert

The industry's most frequently asked questions are answered by the experts

Expert Mark Cass
Technology director

Company Escape Studios
Company website
www.escapestudios.com

The Escape Studios technology team receives all kinds of technical questions from clients and studios that want to get the best out of their hardware and software for maximum performance. We find out some of the top questions and answers that come up. Share the knowledge, we say!

Can you explain SSD disc drives?

Mark Cass: SSDs are simply solid state discs. This means instead of your plattered, spinning disc of old, you've got a piece with no moving parts. In other words, think flash memory, much like a memory stick or camera memory card – just in a higher density! Due to the utilisation of NAND (compact flash) technology in these discs, SSDs are the fastest disc-level solution on the market. The only problem with these beauties is that nobody knows how this new technology will degrade over time, nor how easy or difficult it will be to restore them.

Another major difference between them will be if they are single-level controllers (SLC) or multi-level controllers (MLC), which will drastically impact their speed and capabilities, as well as the price.

We don't see these being part of standard workstation space until they've come down in price and got more certification to rely upon in terms of degradation. Saying this, companies have largely been adopting SSDs and RAIDs of SSDs for applications where speed is critical, such as pre-render preparation and playback – and even as a cache or buffer solution for larger storage units.

If you have a technical question for the Escape Studios experts, email it to lynette.clee@imagine-publishing.co.uk

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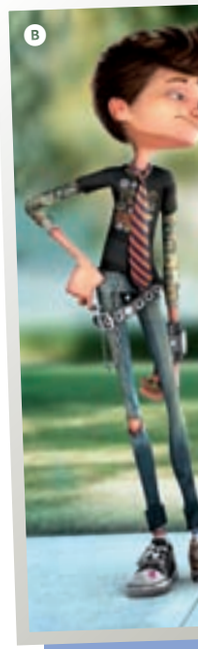
Industry insider

Jason Baldwin

Modeller, DreamWorks Animation

Each issue 3D Artist finds out how people in the 3D industry got their jobs and what you need to know to get your foot on the first rung of the 3D ladder



About the insider

Job Modeller

Education BFA in Media Arts and Animation

Company website www.dreamworks.com

Personal website www.bunkart.net

Biography Jason grew up in fairly rural parts of Washington state. He drew all the time, constantly creating comics in the hope that one day he would draw or sculpt professionally

Jason Baldwin's introduction to the world of CGI could be described as fairly pedestrian. He was walking through a mall one day and spotted a trailer on a monitor showcasing one of Pixar's first shorts. He was immediately blown away by the clean lines and animated graphics. From that point, his personal enthusiasm for drawing and sculpting took him to the Art Institute of Portland, Oregon, for formal education in the 3D world.

All the while he was learning just as much from CGTalk and other similar forums until the day came when he got his big break, landing a modelling and animating job at Reality Engineering. Here, working with a character TD and a concept artist, Jason would create and animate characters for promotional material for big-name clients such as Johnson & Johnson and Ortho Biotech.

Jason went back to school at the Art Institute of Portland to redesign and actually teach the advanced modelling class with an emphasis on anatomy and complex hard surface modelling. It was while working at LAIKA Entertainment as a modeller that his career suddenly came into contact with the entertainment industry. His first role involved performing secondary animation on the short film *Moongirl* and then he went on to undertake the preproduction and look development tests, as well as storyboarding, for blockbuster CG film *Coraline*.

Rapt by the magic of children's movies, he is now creating realistic characters for the upcoming feature, *Legends of the Guardians: The Owls of Ga'Hoole*, the animated feature based on the bestselling books *Guardians of Ga'Hoole* by Kathryn Lasky.

3D Artist: *Do you think having a background in traditional arts is an advantage for a modeller?*
Jason Baldwin: Absolutely. In a studio setting, a modeller's job is to accurately translate a 2D drawing to 3D. This can be terribly difficult and requires good observational skills. Drawing and sculpting from life are great ways to develop this skill.

3DA: *What kind of activities does your job involve on a daily basis?*
JB: In short, keeping art, rigging, surfacing and effects departments happy. Models need to be both aesthetically and technically accurate and often need revisions as they are tested in motion. Main characters take the longest because they need to look perfect on film.

3DA: *Do you work on your own or as part of a team usually? Which do you prefer?*
JB: I definitely work mostly in a team. Even with my personal work I like to pass the texturing/lighting on to people more talented than myself.

3DA: *What personality or particular personal traits do you think you need to be a good team-player in this kind of role?*
JB: The most important skill is the ability to take criticism. That is how we, as artists, get better. Someone who gets offended by criticism often comes off as insecure and rarely lasts in a professional setting. Outside of that, it helps to be pleasant to be around!

3DA: *What are the main 3D skills which you need to become a successful modeller?*
JB: You need a good understanding of the basic modelling tools and deformers and an ability to create clean UVs. A good understanding of topology and where to put spans to create proper deformations is handy too. Also – an unspoken skill – how to create a good presentation to 'sell' the model visually to directors and the art department by posing and adding simple shaders and even lights into your scene.

3DA: *What software packages do you regularly use in your job?*
JB: Maya, Photoshop and Linux.

3DA: *What's the most interesting project you've worked on professionally?*

Portfolio highlights

These are the features that Jason has worked on so far:

2012 *The Croods* (in production)
2010 *Legends of the Guardians: The Owls of Ga'Hoole*
2010 *Shrek Forever After*
2009 *The Mouse that Soared*
2009 *Coraline*
2005 *Moongirl*

A *Deep Water*: A random drawing based on a doodle

B *Max and Milton*: A teacher's pet and a box-wine-swilling reprobate

C *Sachel*: A hairless sasquatch

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It was CG and rendered stereoscopic, but animated and lit so that it looked like stop motion.

3DA: *Do you get time to be creative outside your job? Do you have any personal projects you are working on?*
JB: I typically model characters when I find some free time. I love casually modelling with a movie I only half care about, playing on my other monitor. At the moment I'm modelling an alien fashion model who's a bit full of himself.

3DA: *What training or education should students look for in order to boost their chances of finding a job in the character modelling field?*
JB: College is without a doubt the best way. There are fantastic DVDs you can get (Gnomon, Digital-Tutors, etc) that can teach as well, but I've found it's difficult to maintain the motivation to stick with them without the deadlines imposed by school.

3DA: *What's the toughest thing about working as a modeller?*
JB: Modelling realistic rocks and cliff faces. It's a true art form. It's also super boring.

3DA: *If you could wish for one feature in your most-used software package, what would it be?*
JB: Full integration of a sculpting program like Mudbox or ZBrush.

JB: Once my boss said to me, "We have a realistic stuffed bear and toy piano model. Come up with a photoreal, minute-long short based on those." So I developed and helped execute a short where an unassuming stuffed bear gets eaten by an evil piano.

3DA: *Finally, what would be your dream project?*
JB: Well, I always wanted to model the sea monster in *Voyage of the Dawn Treader*, but I'm a bit late on that one. *The Hobbit* would also be pretty amazing to work on. Outside of those, a short that really inspires me.

> "Once my boss said to me, 'We have a realistic stuffed bear and toy piano model. Come up with a photoreal, minute-long short based on those'"

D *Brusher Bailey*: Egotistical, yes, but what great teeth!

E *Angry Eunuch*: He'd be a superhero if he only had the cojones for it

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Studio Access

Marmaduke

Duncan Evans talks to Matt Johnson about Cinesite's work on the latest canine caper

CINESITE

With one of the largest and most comprehensive facilities in Europe, Cinesite's visual effects team has the capacity and creativity to produce all manner of effects, both digital and physical, for feature films and broadcast projects of all scales. The award-winning team of highly talented visual effects artists takes filmmakers' ideas and turns them into spectacular cinematic reality

www.cinesite.com

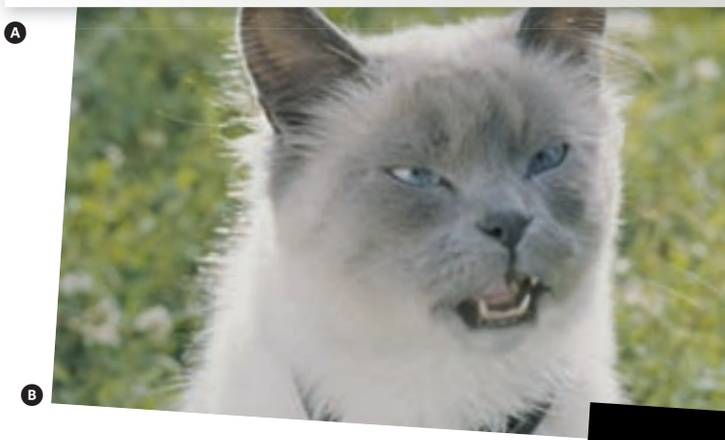
Project *Marmaduke*
Description Based on the classic newspaper cartoon strip by Brad Anderson, this is a modern retelling of the story of Great Dane Marmaduke and his suburban family
Country UK
Publisher 20th Century Fox
Software used Maya, PRMan, Photoshop, ZBrush, plus proprietary tools

Fresh from digging through sand and scorpions in *Prince of Persia* and *Clash of the Titans*, London-based special effects company Cinesite has recently completed work on something a little less ferocious: *Marmaduke*. The film is a modern retelling of the newspaper comic by Brad Anderson and features the voice talents of Owen Wilson as the Great Dane himself, Steve Coogan, Kiefer Sutherland and Fergie. Cinesite spent 11 months on the film completing over 650 shots, largely based on digital heads and faces of the canine actors. The film follows the adventure of Marmaduke who moves into a new suburban neighbourhood with his family, and proceeds to wreak doggy disaster wherever he goes. The man at Cinesite tasked with the project was visual effects supervisor Matt Johnson and his team. Around 120 people worked on *Marmaduke* at Cinesite, from May 2009, continuing through the live shoot up to February 2010, and finally wrapping up CGI in May this year.

The main task for Cinesite was to use its existing proprietary software and custom-built tools to overcome the series of challenges that animating ten different live-action dogs created. "It was a massive task for us," revealed Matt. "Placing CGI faces over live-action animals sounds like a simple task, but each breed of dog or cat brought its own unique challenges and the detailing involved meant we had to push our pipeline to its limits."

Cinesite used a hybrid technique which involved combining fully textured and lit CG passes with parts of the original photography re-projected over the animated geometry. To create the CG faces of the different canine characters, Matt's team built base head models in Maya using photographic references of the dog actors. Blend shapes based on individual muscle shapes were then integrated into the rig using in-house tools. The muscles were further defined in the animation process. A customised rig was designed to mimic the muscle structure of a dog and this became the primary layer of canine muscles. The muscles were further defined on a secondary layer, mimicking the muscles of a human face. The alternative to matching CGI faces and heads to live-action bodies would have been to do entirely CG animals, but that wouldn't have created the same atmosphere and feeling to the movie. Matt explained: "For stunt scenes animals were fully CG, however the filmmakers wanted to make the animals as lifelike as possible, with all the subtle mannerisms of real dogs. Therefore, the hybrid approach of using real animal performances combined with projected and rendered CG faces gave the most subtle and realistic-looking effect. Our work needed to seamlessly integrate with live-action dog performances; even the best CG, when cut back to

> "Our hybrid approach ensured the real animals and CG were consistent and seamless"



Key people

Matt Johnson
Visual effects supervisor

Portfolio highlights

Here are some of the major projects that Cinesite has worked on:

2010 *Prince of Persia: Sands of Time*
2010 *Clash of the Titans*
2009 *Harry Potter and the Half-Blood Prince*
2009 *Beverly Hills Chihuahua*
2009 *Generation Kill*
2009 *Moon*
2008 *X-Men Origins: Wolverine*
2008 *Bedtime Stories*
2008 *The Golden Compass*

A Cinesite used a hybrid technique to combine textured and lit CG passes with photography
© Twentieth Century Fox Film Corporation

B Placing CGI faces over live-action animals proved a testing task for Cinesite
© Twentieth Century Fox Film Corporation

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D

back, highlights any faults. Our hybrid approach ensured that the real animals and CG were consistent and seamless."

As there was such a large live-action component to the film, it was essential Cinesite had people on set. Matt Johnson was involved from May 2009 to May 2010. He was supervising Cinesite's work in Vancouver and Los Angeles, assisted by visual effects coordinator Jan Meade, who was responsible for recording the on-set camera data such as movement, height, etc. They also had to take vast amounts of reference photographs of the animals, which were sent back to the London team and used for building and refining the CG models. This turned out to be vital since, no matter how well trained animals are, there's always going to be one of them looking the wrong way, sniffing the wrong tree, etc, and that needs to be fixed. Matt elaborated, "It's astonishing how well trained all the animal performers were. However, even the best animal actors don't always hit their marks or look in the right direction. These are areas where we had to help. The other major difference between animal performers and actors is that when it's hot, the dogs tend to pant. In these instances, their lower jaws and tongues had to be entirely digitally removed and then re-created."

Cinesite previously worked on *Beverly Hills Chihuahua* and *Underdog*, which both involved lots of fur simulation. The lessons learnt were handy to build upon in this project. Shading was upgraded in several ways, starting with compositors having the capability to control and grade fur from root to tip in 2D. They could also use this to break up highlights, which was especially useful for baddie Bosco, who they wanted to give a scraggy/scary look. Another technique introduced was a wrinkle occlusion pass that was used to dial in furry wrinkles in composition. Matt's team used interactive relighting in their in-house framebuffer software viewPasses. This allowed them to grade lights in real-time, which really sped things up and made the lighting process more artistic. The fur system now also supported occlusion for hair clumps and SSS on the hairs.

Hair and fur are one thing, getting the eyes right is another – especially when there were CGI eyes alongside real eyes in some shots. The team built on previous work for *Bedtime Stories* and *Prince of Persia*. Matt revealed, "Rhythm & Hues kindly shared its texture maps for Marmaduke's eyes, which were really helpful. Lighting the eyes took quite some time. It required a great deal of lights and shader work to get the highlights and incandescence right. We supplied the compositors with control passes to further refine the look. We created fully CG eyes for a handful of shots (eg the trailer shot with the bee landing on Marmaduke's nose) and some shots had CG eye extension combined with the real eyes to allow the animators the freedom to express emotion."

If you recognise Owen Wilson in Marmaduke, it isn't coincidental, as Matt tells us, "We carefully studied Owen's mannerisms and reflected these in the expressions we gave Marmaduke beyond simply making the dog talk. We were attempting to capture a real sense of Owen Wilson in a 200lb Great Dane!"

At the end of the team's year-long stint in the doggy world, ten live-action dogs had CGI work seamlessly blended into their faces and around their necks to sit pixel by pixel alongside the real fur. You'll be hard pressed to see the joins. "It was great to work on our third canine project following the success of *Beverly Hills Chihuahua* and *Underdog*," said Antony Hunt, MD at Cinesite. "Working on *Marmaduke* has allowed us to further develop our dog simulation pipeline, making it an incredibly innovative and powerful tool for projects to come."

C Owen Wilson, given a Great Dane makeover
© Twentieth Century Fox Film Corporation

D Head models in Maya allowed the Cinesite team to build up the layers of muscles
© Twentieth Century Fox Film Corporation

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+ The best courses and freshest talent from around the globe...

Bournemouth & Poole College

Teaching assignments that mimic workflow used in the industry, Bournemouth & Poole College avoids mass lectures and focuses on practical class exercises

Located in prestigious premises in Poole, students studying one of the two 3D CGI course routes at the Bournemouth & Poole College benefit from lessons taught by qualified students in classes with no more than 18 students. The facilities include five computer suites, an open access centre, 360-core render farm, hand-held 3D scanner, and an inertial mo-cap suit that allows students to capture geometric and motion data in any location.

The college works closely with industry partners to ensure assignments reflect what's happening in the real world, in some cases giving students projects that are exact copies of industry briefs with the same criteria to meet. Boosting the college's connections with the industry, they also invite guest lecturers and have company visits, providing students with the opportunity to get feedback from external sources as well as build up their contacts and network.

In the first year of both course streams, all students study modelling, animation, lighting and material applications, as well as graphic communication and production editing and sound. Going into year two students can go down the modelling and animation route, or opt for architectural visualisation. Students on the Modelling & Animation path continue their studies in more depth, with postproduction and advanced modelling, visualisation and animation units added into the mix. The Architectural Visualisation route takes artists through architectural modelling, environment design and postproduction, with further units on lighting and materials and advanced lessons in rendering techniques and animation. With both avenues, students have to produce a major project with personal research, which then gets exposure at the college's annual CGI Design Show. Top grads also have the additional opportunity to exhibit in London at the New Designers exhibition.

Students have gone from Bournemouth & Poole College's CGI courses on to work for the likes of The Mill, the Moving Picture Company, Framestore and Lionhead Studios to name a few, with credits including *Harry Potter* film titles and games such as *Need for Speed*. For more information about the college and its courses, visit **www.thecollege.co.uk**.

> "The college works closely with industry partners to ensure assignments reflect what's happening in the real world"

Course details

Name FdSc/BSc 3D CGI Modelling & Animation
Length Two-three years: two years for the Foundation Degree, plus one year to top up to BSc Honours Degree
Fees £3,000
Entry requirements Four GCSEs (minimum) at grade C or above, including Maths and English, plus a pass in one A-level grade C or above, or a BTEC National Diploma, NVQ3 or equivalent

Name FdSc/BSc 3D CGI Architectural Visualisation
Length Two-three years: two years for the Foundation Degree, plus one year to top up to BSc Honours Degree
Fees £3,000
Entry requirements Four GCSEs (minimum) at grade C or above, including Maths and English, plus a pass in one A-level at grade C or above, or a BTEC National Diploma, NVQ3 or equivalent

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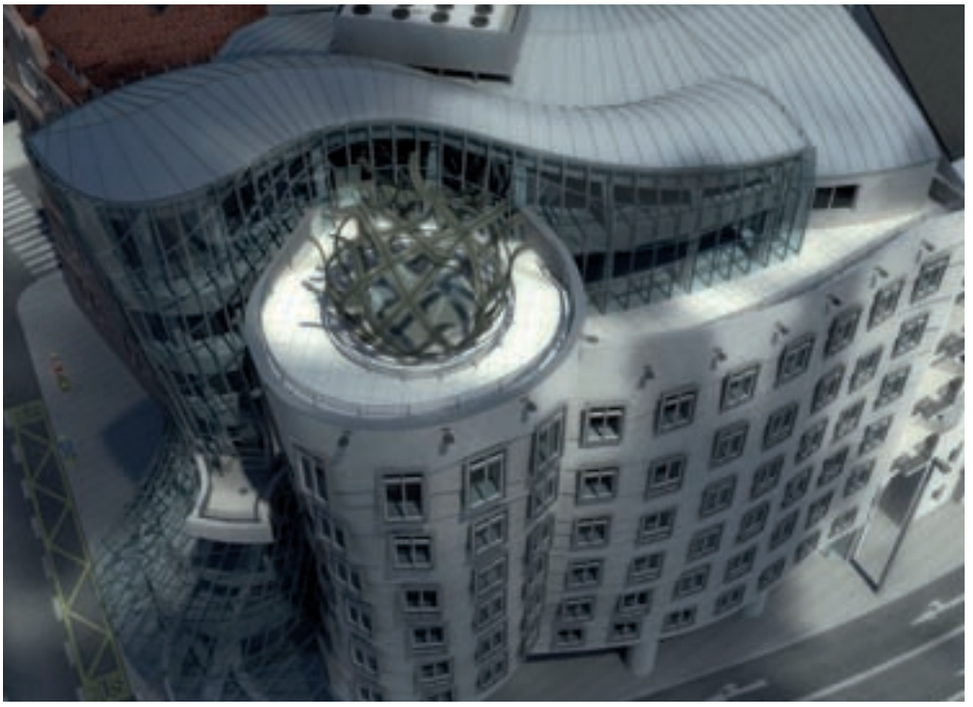

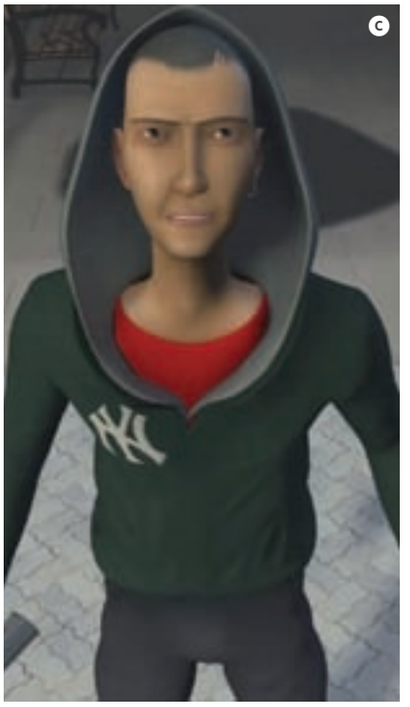

A Ricardo Cook-Martins
Course: FdSc 3D CGI Modelling & Animation
Software used: 3ds Max, Combustion and Photoshop
Based on a film with real actors by his brother, the challenge for Ricardo was to create a stylised animation in the vein of *Sin City*

B Stepan Martinek
Course: FdSc 3D CGI Architectural Visualisation
Software used: 3ds Max, AutoCAD and Photoshop
Modelling a famous non-geometric building was challenging, so Stepan found the plans and transferred each floor from AutoCAD into 3ds Max

C Alex McClelland
Course: BSc 3D CGI Modelling & Animation
Software used: 3ds Max, Combustion, Mudbox, MotionBuilder and Photoshop
An emotional concept based on portraying disrespect in today's society, the animation shows a hooded character desecrating a war memorial

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